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STATE OF NEW YORK

REPORT
OF THE
NINTH ANNUAL
CONFERENCE
OF
SANITARY OFFICERS



1909



New York State Department of Health

PROCEEDINGS

OF THE

NINTH ANNUAL

CONFERENCE OF SANITARY OFFICERS

OF THE

STATE OF NEW YORK

Held at Convention Hall, Rochester, November 10-12, 1909



ALBANY
NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF PUBLICITY AND EDUCATION

New York State Department of Health.

DIVISION OF ADMINISTRATION

Commissioner

EUGENE H. PORTER, A. M., M. D.

Secretary and Deputy Commissioner

ALEC H. SEYMOUR

DIVISION OF SANITARY ENGINEERING

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Principal Assistant Engineer.....H. B. CLEVELAND, C. E.
Special Assistant Engineer.....PROF. H. N. OGDEN, C. E.
Assistant Sanitary Engineer.....C. A. HOLMQUIST, C. E.
Assistant Engineer.....C. F. BREITZKE, C. E.

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Bender Laboratory — Director.....THOMAS ORDWAY, M. D.
Cancer Laboratory — Director.....H. R. GAYLORD, M. D.
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Assistant Bacteriologist.....WILLIAM H. BING
Assistant Bacteriologist.....W. G. FELLOWS
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DIVISION OF COMMUNICABLE DISEASES

Director WILLIAM A. HOWE, M. D.

DIVISION OF PUBLICITY AND EDUCATION

Director HILLS COLE, M. D.

CONSULTING STAFF

Ophthalmologist.....HERBERT D. SCHENCK, M. D.
Dermatologist.....FEEDERIC C. CURTIS, M. D.
Orthopedist.....HARLAN P. COLE, M. D.
Statistician.....PROF. WALTER F. WILLCOX, PH. D.
Laryngologist.....JOHN B. GARRISON, M. D.

TUBERCULOSIS ADVISORY BOARD

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JOHN L. HEFFRON, M. D.....Syracuse

PROGRAM

First Session — Wednesday, November 10, 1 p. m.

THE DIAGNOSIS OF TUBERCULOSIS

A tuberculosis clinic was held an hour each day, when informal demonstrations of the diagnosis of tuberculosis were given by experts in this work. A number of cases were presented to the Conference and the various diagnostic measures on tuberculosis were illustrated by Dr. John H. Pryor of Buffalo, and Dr. Henry L. Elsner of Syracuse.

2:30 p. m.

Meeting called to order by GEORGE W. GOLER, M.D., Health Officer, City of Rochester.

Address of welcome by Mayor H. H. EDGERTON.

Reply by EUGENE H. PORTER, M.D., State Commissioner of Health.

NEW METHODS IN DIAGNOSIS AND TREATMENT OF INFECTIOUS DISEASES

WILLIAM S. MAGILL, M.D., Acting Director State Hygienic Laboratory, Albany.

Discussion by

GEORGE W. GOLER, M.D., Rochester.

F. E. FRONCZAK, M.D., Buffalo.

JOSEPH D. CRAIG, M.D., Albany.

PUBLIC HEALTH WORK IN OHIO

CHARLES O. PROBST, M.D., Secretary Ohio State Board of Health.

INFLUENCE OF TRADES ON DISEASE

Mr. FREDERICK L. HOFFMAN, Statistician, Prudential Life Insurance Co., Newark, N. J.

Discussion by

CHARLES C. DURYEE, M.D., Schenectady.

C. H. GLIDDEN, M.D., Little Falls.

Second Session — Wednesday, November 10, 8:00 p. m.

PUBLIC MEETING

Chairman, Mr. JOSEPH T. ALLING, President Rochester Public Health Association.

PUBLIC HEALTH PROBLEMS

EUGENE H. PORTER, M.D., Commissioner of Health.

THE PEOPLE'S INTEREST IN PUBLIC HEALTH

RUSH RHEES, LL.D., President University of Rochester.

Conference of Sanitary Officers

SHALL WE CONTINUE OR SHALL WE ABATE THE SEWAGE POLLUTION OF STREAMS?

Prof. W. T. SEDGWICK, Massachusetts Institute of Technology.

Third Session — Thursday, November 11, 10:00 a. m.

A SCHOOL FOR SANITARIANS

JACOB G. SCHURMAN, LL.D., President Cornell University.

THE PUBLIC HEALTH LAW

Mr. ALEC H. SEYMOUR, Secretary State Department of Health.

Discussion by

GARY H. WOOD, M.D., Antwerp.

JOHN W. LE SEUR, M.D., Batavia.

J. F. BARNES, M.D., Watkins.

THE REGISTRATION OF TUBERCULOSIS

MARSHALL L. PRICE, M.D., Secretary Maryland State Board of Health.

Discussion by

J. H. PEYOR, M.D., Buffalo.

J. P. WILSON, M.D., Poughkeepsie.

G. E. ELLIS, M.D., Dunkirk

THE CORNELL SANITARY LABORATORY

Prof. H. N. OGDEN, C.E., Special Assistant Engineer, State Department of Health.

Fourth Session — Thursday, November 11, 2:00 p. m.

SECTIONAL MEETINGS

PROPHYLAXIS OF COMMUNICABLE DISEASES

WILLIAM A. HOWE, M.D., Medical Expert, State Department of Health

Discussion by

E. S. WILLARD, M.D., Watertown.

A. W. BOOTH, M.D., Elmira.

D. S. ALLEN, M.D., Seneca.

Section A — City Health Officers

THE WORK OF A CITY HEALTH DEPARTMENT

D. M. TOTMAN, M.D., Health Officer, Syracuse.

Discussion by

WALTER A. COWELL, M.D., Olean.

C. D. MCCARTHY, M.D., Geneva.

F. H. PECK, M.D., Utica.

JOHN J. MAHONEY, M.D., Jamestown.

J. H. LAROCQUE, M.D., Plattsburgh.

RALPH ROBINSON, M.D., Lackawanna.

Program

THE ORGANIZATION OF A CITY HEALTH DEPARTMENT

GEORGE W. GOLER, M.D., Health Officer, Rochester.

Discussion by

MORRIS WOLF, M.D., YONKERS.
H. M. HICKS, M.D., Amsterdam.
W. H. SNYDER, M.D., Newburgh.
WM. P. EARL, M.D., Little Falls.
J. D. VEDDER, M.D., Johnstown.
GEO. W. MILES, M.D., Oneida.

Section B — Village and Town Health Officers

THE WORK OF A HEALTH OFFICER

MONTGOMERY E. LEABY, M.D., Health Officer, Town of Gates.

Discussion by

FRANK W. OVERTON, M.D., Patchogue.
W. L. AYER, M.D., Owego.
W. H. NICKELSON, M.D., Adams.
JOHN E. OTTAWAY, M.D., Charlotte.
C. C. VEDDER, M.D., St. Johnsville.
HUGH HALSEY, M.D., Southampton.

COUNTY SANITARY ORGANIZATION

O. J. HALLENBECK, M.D., Health Officer, Canandaigua.

Discussion by

JAMES H. DURHAM, Cape Vincent.
E. W. BRYAN, M.D., Corning.
D. M. TOTMAN, M.D., Syracuse.

SOCIAL EVENING

Fifth Session — Friday, November 12, 10:00 a. m.

WHAT THE FEDERAL GOVERNMENT IS DOING FOR PUBLIC HEALTH

Surgeon-General WALTER A. WYMAN, United States Public Health and Marine Hospital Service.

THE INVESTIGATION OF A TYPHOID EPIDEMIC

Passed Assistant Surgeon L. L. LUMSDEN, United States Public Health and Marine Hospital Service.

Discussion by

H. H. CRUM, M.D., Ithaca.
F. N. C. JERAULD, M.D., Niagara Falls.
Prof. H. N. OGDEN, Ithaca.

Conference of Sanitary Officers

VITAL STATISTICS

CESSY L. WILBUR, M.D., Chief Statistician, United States Census Bureau.

Discussion by

Mr. F. D. BEAGLE, Director, Division of Vital Statistics, State Department of Health.

ALBERT MOTT, M.D., Cohoes.

D. S. BURR, M.D., Binghamton.

Sixth Session — Friday, November 12, 2:30 p. m.

BENZOATE OF SODA IN FOOD

DANIEL R. LUCAS, M.D., New York City.

THE CONTROL OF A MILK SUPPLY

Prof. H. A. HARDING, Geneva.

Discussion by

E. A. DIDAMA, M.D., Cortland

LOUIS VAN HOESEN, M.D., Hudson.

F. A. WATERS, M.D., Lockport.

THE PREVENTION OF OPHTHALMIA NEONATORUM

F. PARK LEWIS, M.D., Buffalo.

Discussion by

W. A. HOWE, M.D., Phelps.

J. W. KNAPP, M.D., Canastota.

JOHN L. HAZEN, M.D., Brockport.

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Proceedings of the Ninth Annual Conference of Sanitary
Officers of the State of New York, Convention
Hall, Rochester, November 10-12, 1909

The Conference was called to order by George W. Goler, M.D., Health Officer of the city of Rochester, Wednesday, November 10, 1909, at 2:30 p. m.

OPENING ADDRESS BY DR. GOLER

I am sure on behalf of the Health Bureau, I am glad to extend to all of my fellow sanitarians a most hearty welcome to Rochester. I think we have only to look at the program which has been presented for our consideration, to extend our thanks to Dr. Porter, for the distinguished men he has succeeded in bringing here to discuss these questions before us.

Not only are we to hear these visiting sanitarians, but we are also to take part in this congress ourselves, and through the reading of the papers and the discussion, we are to find out the newer ways for the prevention of disease, and the road to health.

You know, to-day, we are not only interested in perfecting the data of disease, but we are interested in finding the way to health; so that as time goes on we may realize, as Pasteur said, that it is within the province of man to banish infectious diseases from the face of the earth.

Again, I bid you hearty welcome.

I have again the pleasure of introducing, in the absence of his honor, the mayor, one who is chosen to extend the greeting of the city of Rochester, and he will come in his three-fold capacity, in his own person, and as the representative of the mayor, and as the secretary of the mayor: I take great pleasure in presenting Mr. Charles E. Ogden, secretary to his honor, Mayor Hiram H. Edgerton, of Rochester.

ADDRESS OF WELCOME BY MR. OGDEN

LADIES AND GENTLEMEN OF THE CONVENTION — I should like to say in opening, that it is a very rare privilege and pleasure to welcome you to Rochester, but I can say so only in a qualified sense, for yesterday when his honor was forced to be present at another meeting it was my pleasure to welcome to the city of Rochester the convention of Women's Clubs; and after that I must confess you are somewhat tame, because they represent so much, and because they have such a lovely way of representing it; and because you represent so much, and have such an odious way at times of representing it. But in all seriousness the city of Rochester is delighted to have you come here and hold your meetings, and to feel that there is a representative body of men among us, which is interested in the broader, larger questions of life. And there is no question that goes home so closely and so thoroughly to us as that of our health. This is especially true of the cities, for city life is the problem of the present and the future. And how to maintain wholesome, healthful surroundings, and how to instruct the people so they will help to maintain wholesome and healthful surroundings, and how to inculcate in the minds of the country folk and the young people, and the students of sanitary questions, what is best for them. These are immense problems, and problems which must have the careful attention of all philanthropists and patriots. And the city of Rochester realizes that while private philanthropy may do much, and while your intelligence and your personal effort may do much, and while the skill of the specialist and the student of anatomy may do much, yet after all, in the last analysis, the foundation of government must play its important part and bring home the practical application of what you have done, and what private enterprise has brought about. In other words, it must bring home that practical application to the affairs of all the people.

We know that yellow fever has been practically blotted out of Cuba, and it was done after government took hold. We know that in the reduction of diphtheria and typhoid that government has played its very important part. Therefore, the government

of the city of Rochester, enveloped as it is in the health bureau of which it is justly proud, is very glad to have you folk here, that we may learn, and that you may give us an uplift along these truly important lines, in the affairs of our city, and in the affairs of all mankind.

We are not afraid of you at all. We have measured up the probability of your painting the town red, and we have decided that we are not afraid. We are not afraid of your theories; we are not afraid of your highest looks into the future; we are not afraid of your enterprise, for Rochester at present is in the halo of glory of its own enterprises, and it is especially triumphant in its commercial, industrial and business life. But while it is expanding and broadening, it does not wish to forget for a moment, its indebtedness to the higher walks of life; and to philanthropy in its broadest and best sense.

Rochester, as we believe, is the most beautiful and the most ideal city in the world. Rochester is progressing and expanding; and is proud as proud can be of its location, of its business, of its enterprises, of its health, of all that goes to make a city large, beautiful and fruitful to live in.

Now, you see how swelled up we are in regard to Rochester. But, Rochester wants to be proud of its hospitality; and it wants you to feel that you are at home; and that it is our business to make you feel at home, and to give you a welcome in every sense of the term. We extend to you the freedom of the city. I do not know what that means exactly, but we extend it to you nevertheless. Let me implore you to make the most of it. And we have a little motto here, "Do it for Rochester." We are trying to do everybody for Rochester. We will make the same attempt upon you, but, get back at us and "do" Rochester for all it is worth.

And in behalf of the mayor of this municipality and in behalf of the health association, and in behalf of all the citizens of Rochester, I again extend to you the heartiest, happiest sort of a welcome that it is possible for me to do and to wish for you great results from your deliberations, and a period of genuine enjoyment while you are within our borders.

THE CHAIRMAN — Gentlemen, I think in response to what Mr. Ogden has said, we may say to him that we will "do" Rochester for its health's sake if in no other direction.

And now, I am like one of the Ephemerides, that lives but for a brief period. I have had my moment, or my hour of pride. I simply take the toga of presiding officer from my shoulders, and place it upon one who has made the Health Department of the State of New York take its place among the States of the Nation, Dr. Eugene H. Porter, the Commissioner of Health of the State of New York.

REPLY BY DR. PORTER

MR. CHAIRMAN, MR. SECRETARY AND FELLOW SANITARIANS — I always feel when this portion of the program is reached, where welcoming addresses are given and appropriate and of course felicitous replies are expected, and it devolves upon me to take part in such pleasant exercises, I am always reminded of the story of the little boy who was sent by his mother to invite a woman friend to tea. The boy had evidently heard some conversation at home regarding the status of this to-be invited guest, and so he said to her, "Ma would like to have you come over to tea at four o'clock this afternoon, and have it over."

But, really, while the ordinary messages of greeting are without any further significance than that given by the courtesy which prompts the speech, there is something in our welcome here this afternoon, it seems to me, that might fittingly require a few words in reply.

It is not in this beautiful hall where we are gathered, nor in the audiences that may hereafter assemble during the sessions of this Convention; nor in this kindly and eloquent speech to which we have listened, that we must seek for the deepest significance and meaning of our reception in this city of Rochester. Underlying all, and as a foundation for all, lies the splendid work, the splendid sanitary work done by the city of Rochester. And it is that which gives such a fitting and fixed significance to this reception.

Rochester has entered upon the road of sanitary education, enlightenment and progress. In her work is beginning to be illustrated the truth that sanitation concerns itself with all the affairs of men. In the work of the mayor and the common council of Rochester, in the efforts of the chamber of commerce, with its hundreds of active and intelligent members, in the work of the health officer and public health association, and in the work of many private citizens, we find advancing in Rochester a spirit of intelligent, comprehensive, sympathetic understanding of the development of sanitation, which is lacking in many of the towns of our State; and so in this welcome we come to the realization that

our fellow citizens are beginning to recognize that the threads of sanitary science run in increasing numbers through our complicated modern civilization, and also that what is for the interest of one, is in the interest of all.

And, so, I think we can say in reply to the representative of his honor, the mayor, that we are glad to be here in Rochester, and that as sanitarians we regard the city of Rochester as one of the jewels in the Empire State.

My friends, I need not say how glad I am to be here this afternoon, and to be able to greet in friendliness and accord with those members of the Health Department that we are not able to see very frequently at Albany. We have tried to the best of our ability to provide for you a practical program, and as you will note, by considering the names of the various speakers, you will see we have some of the most eminent leaders in sanitary matters to be found in the United States.

I have no doubt that this Conference will be one of the most successful of any we have been able to hold.

There is one announcement of importance which I think will interest most of you, which I would like to make before introducing the next speaker; and that is in relation to courses of instruction for health officers. That is a matter concerning which many of you have spoken about to me. It is something which has been under consideration in this Department for some months, and some time ago you will remember, we held a series of sanitary institutes throughout the State. While they have been discontinued, it was not my purpose to finally discontinue them; on the contrary, it was my idea that there was enough support from the health officers of the State to make us conclude that they warranted their continuance; and so in the last few months in Albany, we have been considering this matter.

We will discuss it later this afternoon. If there are too many subjects, or the course is too long, I wish you would give me your frank opinion about it, and have no hesitancy in saying what each of you as an individual would like in a school of this kind.

Of course we labor under some disadvantages. If you were able to follow your inclinations you would come and spend two or three weeks there at a time, but most of us are practising medicine

and it is impossible to leave such a practice for such a period. So we must endeavor to make short visits, and crowd in as much as we can in a limited period.

Here is a tentative program: These courses will be held at Albany, Staten Island and Ithaca. They will be held throughout the year. Their duration will be five days, from Tuesdays to Saturdays.

Now, that will not interfere with any one of you coming to Albany or going to Staten Island or to Ithaca, arriving one day and leaving the next day. If we are unable to give you the full course, we will give what we can; so, while, if you could stay the five days, we could complete the course laid out, yet do not hesitate to come because you cannot stay the full time. If you can give one, two or three days, you will be as welcome as if you came to stay the entire time.

There will be some lectures on inspection, establishing and controlling a quarantine, vaccination, disinfection, and so forth. There will be laboratory courses daily, morning and afternoon.

Under the first heading, we have the following:

- 1 Sanitary examination of water
 - a* Field survey
 - b* Where and how to collect samples
 - c* Care of samples in transit
 - d* Determination of physical properties
 - e* Chemical analysis — methods and applications
 - f* Bacteriological analysis
 - g* Demonstration and exercises in the interpretation of the results of water analysis
- 2 Clinical microscopy
 - a* A short exercise in general bacteriology
 - b* Making and use of usual culture media
 - c* Preparation and inoculation of cultures for diagnosis
 - d* Preparation and use of bacterial stains
 - e* Isolation of specific germs from a mixed culture
 - f* Preparation of slides, smears and swabs for work in diagnosis of microbes
- 3 Diagnosis of blood
 - a* Methods of collecting, preserving and transmitting blood

- b* Use of the centrifuge, cryoscope and hemoglobinometer
 - c* Blood counts and formulæ and interpretation
 - d* Determination of phagocytic and hemolytic properties of blood cells and sera
- 4 Diagnosis and differentiation of the microbes of diseases
 - 5 Special methods and special diagnoses
 - 6 Studies and exercises in the production, valuation and use of vaccines and the antitoxic sera of tetanus and diphtheria.

In addition to these short courses, a long course of six weeks duration will be offered by the State Hygienic Laboratory at Albany during the summer.

In addition to that, after consultation with Dr. Doty, health officer of New York, we have arranged a course, owing to his thoughtfulness, on Staten Island.

Now, Dr. Doty authorizes me to offer a course in quarantine inspection, diagnosis of the various diseases that occur there, and full opportunity of seeing how the work is done at quarantine stations. He further offers accommodations and maintenance during the stay there of two or three days, without expense to the health officers.

Now, it seems to me with these various courses open to the health officers of the State, that we should be able to make progress in practical lines. The course of Dr. Doty will not be ready until the first of March, next year. Our own course will be ready on the first of December of this year, so by the first of March next year, the State of New York and its Health Department will be able to offer practical instruction to its health officers that it has never reached before. And, yet, while this program may sound to you somewhat enthusiastic, somewhat ambitious, kindly remember we are just opening these schools, and give us that kindly consideration and forbearance that beginners are sometimes entitled to.

There is another matter on the program that some of you may not have noticed. On the last page of the program you will find a notice of a "smoker" to be held at the Powers House Thursday evening at 8:30. Do not forget it. That will be the social evening of the Conference, where we will have an opportunity to meet and get acquainted, and have a real old-fashioned time.

It is with no inconsiderable degree of pleasure that I introduce to you now, Dr. William S. Magill, the new director of the laboratory work in the State Department of Health, who will present the subject: "New Methods in Diagnosis and Treatment of Infectious Diseases." Dr. Magill comes to us with a large experience in this country, and with a still larger experience abroad, and with diplomas from Paris and Berlin. Bringing all his experience in practical work to us, I believe that under Dr. Magill's administration, the laboratory of the Department of Health of the State of New York will enter upon a career, where it should be placed, namely, in the front rank; and that the work done, both routine and research, will cause it to stand by such laboratories as those of the State Board of Health of Massachusetts.

DR. WILLIAM S. MAGILL — The Commissioner has made my task more difficult by his very pleasant introduction, which I hope I may merit.

NEW METHODS IN DIAGNOSIS AND TREATMENT OF INFECTIOUS DISEASES

BY WILLIAM S. MAGILL, M.D.

Acting Director State Hygienic Laboratory, Albany

It is not the purpose of this paper to present any general study of so large a scope as the title might indicate, but only to submit to your consideration a limited number of diagnosis methods of relatively recent development; to lay stress upon their ease of application; and to point out their valuable contribution to a positive knowledge of pathological processes and their consequent field of utilization in practice.

It will also be my effort to indicate the wider use of such methods than for diagnostic purposes only; in some cases I shall point with insistence upon the value of such methods in prognosis and in the control of therapeutic effort and effect.

The imperative importance of early diagnosis of tuberculosis is established. We are not here interested in the mere determination of the bacilli of tuberculosis in sputa or excreta, but in methods that shall unmask a beginning invasion of the organism by these bacilli: the precocious diagnosis of a tubercular infection.

There are various methods which reveal such infection in its initial stages with great reliability.

The use of tuberculin as a diagnostic agent dates from Koch's failure to establish its value as a general means of cure.

It was found that an hypodermic injection of a minute dose of tuberculin provoked a marked and prompt rise of temperature in a tubercularly reacting organism.

The exhaustive studies and perfections of this use of tuberculin have completely demonstrated its value as a diagnostic method; but have also revealed dangers and disadvantages of sufficient gravity to confine its application to specially trained observers.

It may be said in general terms that nine out of ten individuals infected with tubercle bacilli will evidence this fact by their reaction to the injection of tuberculin, almost immediately upon

the establishment of such infection in the organism, and throughout the entire duration of the organic resistance to invasion.

A characteristic rise in temperature subsequent to injection of tuberculin is quite positive evidence of tubercular infection of the organism tested. The failure of this reaction is not evidence of the nonexistence of such infection; but in general terms it can be said that the cases in which such failures are possible are limited to at least one in ten. Such a failure is generally due to the fact that the infected organism is so exhausted as to be no longer reactive. In such cases of course the clinical symptoms of tuberculosis are not deficient.

The studies of the rise in temperature of the infected subject tested by tuberculin have shown that this tubercular affection provokes a marked hypersensibility of its victim to manifest high temperature on slight provocation.

Based on this susceptibility to heighten temperature two methods of diagnosis are now used.

Often, at the first onset of tubercular invasion, it will be found that the muscular and mental activities of the day's work are sufficient to provoke in the infected individual a slight rise of body temperature above the normal during the late afternoon or evening. This fact is of ancient clinical observation and use in the early diagnosis of tuberculosis.

It is developed into a method of diagnosis when a suspected individual is directed to take moderate exercise for half an hour or more, with hourly observation of his subsequent temperature. A rise above the normal is strongly indicative of the existence of infection, if found to be a constant phenomenon under such conditions.

The second diagnostic method, based upon this characteristic rise in temperature, is widely used in France and seems to be of well proven reliability. It is based on the particular susceptibility of tubercular subjects, even in the earliest stages, to any dose of iodine.

The method consists in administering to a suspected subject a relatively small dose of iodide of potassium and carefully observing the temperature of the ensuing twenty-four hours. If the subject be infected with tuberculosis, a marked rise of tem-

perature is a quite constant phenomenon and a distinctly valuable point of diagnosis. Objection to this method is made as also to the use of the injection of tuberculin on the ground that the drug administered may facilitate the development of the pathological process. It can be answered, however, that such drug administration for purposes of diagnosis is not long continued nor often repeated and, therefore, not liable to cause permanent injury when skilfully used and observed. One of the advantages claimed for the administration of iodine as an aid in the diagnosis lies in the temporarily quickened and augmented pathological actions; frequently permitting the clinical detection of the true temporarily exaggerated symptoms. One need not too hastily descry a diagnostic method on the ground that its use for the time being exaggerates a pathological condition. No one would rationally regret palpation for determining the localized pain on the ground that it temporarily exaggerated the pathological compression of swollen tissues.

Because of the accusation — perhaps quite speciously made — of possible harm in the injection of tuberculin and the ingestion of iodine the use of these methods has remained quite limited in spite of their great utility and proven reliability for the precocious diagnosis of tuberculosis.

Experts in very different lines of investigation have developed such results that the value of the preceding methods has been overlooked.

With the same fundamental property of tuberculin to develop a specifically marked reaction in the tissues of a tubercular individual, efforts to avoid the production of a general reaction of such organism by eliminating from the test the introduction of any tuberculin into the general system have been most successfully made.

As the result of this line of experimentation, have been established three diagnostic methods, all built upon this irritant property of tuberculin; but restricting to a minimum the area of the provoked reaction of the organism.

First, in order of time of the introduction is the conjunctival; second, the inoculated cutaneous; and third, applied-cutaneous reaction to tuberculosis.

These methods are alike in fundamental principles and approach each other in the value of their results for the remarkably early diagnosis of any organism reacting to tubercular infection. They differ merely in minor details and in the technique of the several diagnostic methods, as indicated by the name applied to each.

The conjunctival reaction is obtained when one drop of a one per cent. solution of well chosen tuberculin is cautiously instilled upon the temporarily inverted conjunctiva of an individual organically reacting to tubercular infection. Under proper conditions this reaction is shown by the intense reddening of the seat of instillation within a few hours, persisting from one to several days thereafter in practically all such infected individuals. The reddening of the thus instilled conjunctiva of a normal nontubercular individual is practically never observed.

Objection to the use of the conjunctival method is made by a claim that cases of serious complication of ocular tissues have resulted. One such case, about which a great deal was said and published in New York was found quite unfounded by the personal investigation of this writer. The men who have most thoroughly investigated this method — Wolff-Eisner and Calmette — and used it in very many thousands of cases, are strong in their showing that there is practically no harmful result to be feared in any case suitably subjected to the conjunctival test.

The enormous number of individuals examined by this conjunctival method in the hands of most expert observers has already permitted the collection of clinical data for establishing the use of this method, not only for diagnostic, but also prognostic purposes.

In speaking of this reaction it becomes my duty to point out a grave fault in many writings on this subject. The reaction is often referred to as the "Calmette Reaction," on account of the propaganda and use made of the reaction by that authority. Apparently no writer who criticises the reaction as dangerous has ever taken the trouble to know what the so-named reaction really was, for I have found one who appeared to know what sort of tuberculin Calmette used — a very vital point of this test if it is to be criticised as dangerous.

When Calmette took up his propaganda for the employment of the conjunctival reaction for the diagnosis of tuberculosis, he used a chemically precipitated and thus purified tuberculin in a standard solution and when he or his coworkers state the results of such tests as harmless you must remember that such results are from the use of a pure reagent. Subsequent writers seem to have utterly failed to consider the nature of the tuberculin as at all important. I have never been able to find one of these who knew anything about the kind of tuberculin used in the tests he so elaborately classed and criticised.

To avoid the criticism of possible harm to a valuable organ, the use of a cutaneous reaction is often advocated. By the simple process of scratching the epithelium and the application of a drop of the same solution of tuberculin to this insignificant wound of the skin, in fact the simplest sort of a vaccination operation at any chosen point of the tegument, the inoculo-cutaneous method of using tuberculin for the diagnosis of tuberculosis is carried out.

A zone of more or less intensity and diffused redness of the surrounding tissues is developed in the course of a few hours and persists for one to several days in all persons reacting to a tubercular infection.

In this method, as well as in the conjunctival, the clinical data accumulated would point to the great value of this test, for both diagnosis and prognosis. It may also be found quite effective in its operation, according to the employment of a tuberculin of human or bovine origin, to indicate the corresponding source of the infection of the subject submitted to this diagnostic method.

To avoid abrasion of the epithelium, which is requisite in the inoculo-cutaneous method, a salve containing the tuberculin is thoroughly rubbed into a selected portion of the skin and this application is quite sufficient to provoke a manifest zone of intense redness of the skin of individuals reacting to the tubercular infection.

All of the preceding three methods of diagnosing tuberculosis infection by the reaction of a selected and localized zone of tissue subjected to the activity of tuberculin, yield very prompt and valuable results and are subject to little objection or hostile criticism

of any standing. This may account for the very great rapidity of their spread into most extensive and very general use.

A French authority recently pointed out the ease with which this same line of investigation could be carried out by the simple application of a drop of the one per cent. solution of chosen tuberculin to any suitably prominent nasal turbinate or pharyngo-nasal mucosa. In this case a marked hyperemia of the point touched with the reagent, rapidly develops and persists at least thirty-six hours in the individuals reacting to tuberculosis infection.

In the use of provoked high temperature, the conjunctival, or the cutaneous, reactions to tuberculin, it is scarcely probable that the individual submitted for such method of diagnosis will remain in ignorance of its import and nature. The positive reaction to such tests is most patent to such individual and must reveal to him this ill omen.

To avoid the liability of the patient's inevitable observation of a positive diagnostic conjunctival, cutaneous or temperature reaction, it has seemed of great advantage to use the pharyngo-nasal mucosa for the chosen site for this sort of tuberculin application and observance of reaction. I have followed this as a method of procedure at my clinic at the New York Nose, Throat and Lung Hospital for more than a year with most satisfactory results. There is no difficulty of application of the reagent nor observation of any consequent reaction. The patient has no knowledge of the operation nor of its consequences. A long continued control of these cases by either a conjunctival or cutaneous test demonstrated the uniformity of results.

All of the preceding methods of diagnosis of tuberculosis involve the provoking of a phenomenon to be noted only by more or less constant and personal observation of the suspected individual. Such methods are inapplicable for long distance control.

Two methods of determining the existence of a tubercular infection without continued or personal observation of the patient have been employed and are proving their claims.

The first method in point of time is based upon the well-known Pfeiffer serum reaction, which was the precursor of the Widal test, now so universally used. You will recall the fundamental principle of that reaction, as established by the clinical observa-

tion: that the serum of an individual resisting or recovering from an invasion of infectious germs, when added in a very dilute form to an active culture of the specific motile germs of that particular infection, would soon arrest all motility and provokes the sedimentation of such germs in their liquid cultures.

By careful search and cultivation, strains of tubercle bacilli have been found, in which the individual germs are so motile that their fluid culture constitutes a really homogeneous suspension of the specific germs, with no sedimentation thereof at the bottom. To make with such culture a method of diagnosis of tuberculosis, it is sufficient to receive a minute amount of blood or serum of the individual suspected. This matter is added in diluted form to the liquid homogeneous culture above described, and if the organism of the source of such serum was reacting to tubercular infection, the phenomena of sedimentation of the bacteria takes place in their culture within a few hours, whereas no sedimentation results from the blood or serum of normal or practically non-tubercularized individuals. The accuracy of this method of serum diagnosis of tuberculosis is well established and it corresponds very closely to the percentage reliability value of the conjunctival and cutaneous reactions.

The second method of this kind, also requiring a small amount of blood from the individual proposed for diagnosis of a tubercular infection, is still in the hands and control of its originator and must be mentioned here subject to all the reservations of a progressive step of great promise, but not yet released from the laboratory proofing of its foster-parent. The foundation of this method lies in Calmette's observation that an infection of tuberculosis which provokes an active resistance of the organism, determines the appearance of an appreciable quantity of lecithin substance in the blood of such individual. By reason of the special quality of Cobra venom to fix such lecithin matter, by the use of a standardized solution of this venom the amount of lecithin appearing in the blood of the individual can be determined and fixes a diagnosis of tuberculosis.

This method holds out to us a most entrancing promise, for subject to verification and control of his series of experiments Dr. Calmette tells me that the amount of lecithin in the blood is an

index of the organic resistance. In this case the accurate determination of the amount by this method permits the exact measure of the state of infection at any given time. The degree of resistance being then known, an exact method for prognosis, as well as diagnosis, is here available and what is of far reaching import in medicine: a new power is placed in our hands when this method fulfills its promise; for by such accurate determination of a correct index of the progress of a disease we have for the first time a source of accurate knowledge and control of therapeutic efficiency.

The similitude of underlying factors involved in this work of Calmette and that which is bearing such ample fruit in the subject of hemolysis is striking, and leads at once to the next line of diagnostic work, the serum diagnosis of syphilis.

Our limit of time only permits the mention of the easy and positive demonstration of the specific microbe of syphilis, which we possess for a diagnostic method of any suspected tissue, and the very simple and practical method used by Noguchi, whereby a minute portion of blood or serum of any suspected case can be sent to great distances for a diagnosis of very great reliability which can be made in the laboratory in two hours' time. The value of this serum test is by no means limited to its use in diagnosis; for here, too, appears this new power in medicine which I have mentioned. By this method of serum test a positive knowledge of the state of the disease and an accurate measure of therapeutic efficiency is in our hands.

I must reserve for a future opportunity the demonstration of the resources of blood examination to show the onset of a diabetes long before any clinical symptoms of glycosuria, or to absolutely determine by a single examination any doubtful diagnosis of small-pox. But I must mention the power which the developed methods or cryoscopy have given us to foresee, forestall or control the critical periods of insufficient renal functions with consequently developing toxemia and our ability to accurately determine the degree of such impairment and select the impaired kidney.

Few realize the ease with which an examination of the blood will permit a diagnosis of pus formation in cases of pleurisy, appendicitis or cholecystitis and similar affections. The value of

such easily obtained positive knowledge makes it an imperative duty for the medical practitioner to obtain every available aid from these diagnostic methods.

• THE CHAIRMAN — Discussion will be opened by Dr. Goler.

DR. GOLER — I trust it may be understood that the visiting physicians of Rochester may be invited to enter into this discussion. That is, those who are not members of the Conference will take part in this discussion. Only a few comments on this valuable presentation of this remarkable lot of data by Dr. Magill. I think there are only a few of us now who are able to take advantage of all the work that has been presented by Dr. Magill. In the diagnosis on tuberculosis, in particular, I think that what we need very largely is to be able to determine the ordinary case of pulmonary tuberculosis; not perhaps that class of case referred to by Dr. Elsner this afternoon, at the clinic, which only presented a lesion in one of the apices of the lungs; but we should have in mind these few facts: that when a patient presents himself to us with a little loss of appetite, and a little loss of weight, with a slight rise of temperature in the afternoon, with a slight rise in the pulse, we ought to give that patient the benefit of the doubt, and we should examine and re-examine that patient, until we became satisfied that the patient has or has not either tuberculosis or some disease that is threatening the life of that patient.

When we have done that, assuming that we apply to that patient one of the highest tests, or one of the second tests, either by rubbing in ointment, or tuberculin, and we get a reaction, are we in position then to say that is a patient afflicted with tuberculosis? By no means! If every man in this room would permit a mural to be made on him, how many would react? I know I would as I have already done so. But we have not tuberculosis by any means. I believe, gentlemen, we have got to be very careful indeed, how we interpret these reactions; that we cannot interpret them alone. We cannot interpret the subjective or objective symptoms alone, but we must take the whole picture, and by examination and re-examination, refine our evidence until we become satisfied what is the trouble. We do not make examinations. We make inspections. We say: "Let me see your tongue. Have your bowels moved? Fifty cents. Get out"!; and that is why the patients are going to Christian Science to-day.

Over in a sanitarium in Germany is the sign that every man has a little tuberculosis, and every man has a little of it; and we must be very careful how we term a nonevident case of tuberculosis, the evident case. The only difference is we are paid about as poorly as the helper in a plumber's shop, and we are expected to give value received.

Just one other point with reference to tuberculosis, and that is this: a man or woman comes to a tuberculosis clinic, and after a painstaking examination and re-examination, that patient is said to have tuberculosis. He goes elsewhere, and they say he has not tuberculosis simply because there were not tubercle bacilli found in the sputum.

We hope to make a diagnosis, and every intelligent man should make a diagnosis of tuberculosis. Consider what it would mean if we could get a diagnosis with only one or two points of eruption, and we could get from the laboratory proof to the people who are the "doubting Thomases" who make us so much trouble.

DR. PORTER — Our time is limited, and we will throw the paper open for brief discussion, if there are any who wish to discuss it.

If not, we will take up the next paper on the program. The gentleman whose name is attached to that paper needs no introduction to this audience. He is President of the American Public Health Association, and I now have the pleasure and the privilege of introducing one whose work in Ohio is of national prominence—it is a matter of great privilege to present Dr. Charles O. Probst, Secretary of the State Board of Health of the State of Ohio.

PUBLIC HEALTH WORK IN OHIO

BY CHARLES O. PROBST, M.D.

Secretary Ohio State Board of Health

I presume that we are doing little or nothing along health lines in Ohio that you are not doing equally as well or better yourselves. Probably the difficulties we encounter in trying to extend and better our work you, too, have to meet. It is always helpful, however, to exchange experiences, and possibly in telling you something of our work and our hopes, plans and failures, something may be evolved in the discussion that will be useful to all of us.

Ohio is one of the largest states of our middlewest country. The territory is mostly flat or rolling with no mountains, and most of the land is under cultivation. Our interior streams are small, and much of the soil is of a clayey nature.

These topographical features have much to do with our sanitary problems as will be seen further on.

Our population is mostly native born, though we have quite a number of foreigners in our large cities, and there is a considerable sprinkling of blacks.

The State is divided into 88 counties and 1,360 townships. We have 69 cities, i. e., municipalities of 5,000 inhabitants or over, and 703 villages, or communities of anything less than 5,000.

Our health service consists of a State Board of Health of seven members and a secretary; and of local boards of health and health officers. Our cities have boards of health of five members and a health officer, but by a political trick, which has been very harmful, the Health Act was amended so that boards of public service may act as a board of health. Boards of public service have charge of all the city's affairs except the police and fire departments, and have little knowledge of health matters. This amendment was made solely to play political favorites and has been taken advantage of by many municipal authorities for that purpose.

In villages there may be either a board of health of five members or a health officer in lieu of a board of health, appointed by council but approved by the State Board of Health. In the

townships or rural districts the township trustees serve as a board of health and they appoint a health officer.

I speak of our organization in order to criticise some of its objectionable features in taking up the sanitary work this somewhat complex organization is doing — or is expected to do.

In the first place our rural health service is highly defective. Our township trustees are frequently changing, and for the most part have little knowledge of or interest in health matters. I would abolish township and village boards of health and replace them with a health officer directly responsible to the State Board of Health. A minimum salary for such officers should be fixed by law.

City boards of health should be independent of politics or parties. The health officer should be selected on merit, possibly with the approval of the State Board of Health, and should be removable for cause only. All other employees should be under civil service. Adequate appropriations for city boards of health by a fixed levy based on population, or by some other general plan, should be insured by State legislation. Money so provided should be absolutely at the disposal of the board of health.

I am happy to say that in a State where politics is in the air, in a State where Presidents seem to grow on trees, there has been absolutely no interference with the State Board of Health. Never but once did an applicant for a position try to make use of political influence, and he was rejected, and mainly for that reason.

I may now briefly outline the work of the State Board of Health along the lines of its chief activities.

We might broadly divide these into the protection of public water supplies, the prevention of communicable diseases, and the organization and support of local health agencies.

Our board has given special attention to the protection of public water supplies. With a few exceptions the geological conditions of our State are such that ground water in sufficient quantity for a large city is not available. Our only lake large enough for this purpose is Lake Erie. It is already more or less locally polluted by the sewage of cities upon its shores. It is impossible to fully protect our river supplies against pollution,

as we have no large uninhabited watersheds. As the result of these physical conditions the question of water and sewage purification has become of vital importance to us.

Seventeen years ago, by a fortunate circumstance and not from any prevision on the part of our legislators we secured an act requiring that all plans for waterworks or sewerage, or for changes in either, must be approved by the State Board of Health.

The fortunate circumstance alluded to is this. In 1892 Hamburg was having its epidemic of cholera and a reported case in New York City created great public excitement. Taking advantage of this we rewrote our entire Health Act and introduced the bill in the Legislature then in session. The bill was a long one; no one read it; every one said "It's to prevent cholera," and so it was amended, without objections, so as to give our board the authority above referred to.

This power has been judiciously used. Although there is no direct penalty for violation of the act, it has been ignored in comparatively few instances, and, I am glad to say, by no city of any considerable size.

Under its provisions we have examined and passed upon 245 plans for waterworks and 303 for sewerage. By coercion, persuasion, or both, we have since the passage of this act secured the introduction of 43 municipal water purification plants and of 133 sewage purification works.

This work has built up our engineering department. From one engineer, whom we were unable to employ from lack of funds until 1898, we have grown to a department of four engineers and five assistants. With this help we have made rather complete sanitary surveys of all our streams, and a detailed study of all our water and sewage purification works.

We have been led by this in other directions than sewage. Many of our streams are polluted by industrial wastes. It has been our policy to aid manufacturers in finding proper ways for disposing of these. To this end we have and are carrying out continued experiments in waste disposal.

We found a way for drying by evaporation distillery slops and utilizing them for cattle feed, thus removing a nuisance and giving a handsome profit besides. We did similar work, but not so

successfully as regards profits, in converting acid iron pickling wastes into copperas with the removal of a nuisance and the settling of pending lawsuits. For some years we have been studying the purification of wastes from butter factories and creameries, of which we have a number. We have recently solved this problem in a fairly satisfactory way and hope to bring about the removal of many just grievances on this account.

For the past year we have been studying experimentally, with a special laboratory, garbage disposal. We expect in another year to bring in a special report on this subject. We are also making a detailed investigation of all waterworks plants, not only as regards the sanitary and mechanical qualities of the water, but are going into the cost of operation and the keeping of records with the view to reducing this cost.

All water and sewage purification plants are kept under observation and tested at intervals, and all new work in water or sewerage is inspected at frequent intervals during construction to insure that it is being put in in accordance with the plans approved by the State Board of Health.

In the prevention of communicable diseases we must, of course, depend mainly upon our local boards of health. We have our diagnostic laboratory work for typhoid, diphtheria, tuberculosis and rabies. We examine many wells and other sources of water supply suspected to be the cause of typhoid fever. We keep 266 stations supplied with diphtheria antitoxin which is furnished free to the indigent and is paid for by the local authorities.

We have about decided to ask our legislature, which meets next January, to give us means to manufacture antitoxin to be supplied free to rich and poor alike. We believe this would materially reduce the number of cases and our death rate from diphtheria.

Our board secured the Act for a State Sanatorium for Tuberculosis, which was formally opened last month, and a supplementary act requiring counties, or groups of from two to five counties, to establish hospitals for advanced cases of that disease.

We have ten smallpox inspectors, used mostly in diagnostic work. We have framed a bill to enable us to appoint twelve district medical inspectors to be used mainly in the prevention of communicable diseases.

One feature of this bill I will speak of briefly. Under its provisions an inspector may go into any community where a dangerous communicable disease has appeared, and if the local authorities refuse or fail to promptly enforce proper restrictive measures he may assume charge, appoint deputies and create any necessary expense. This must be paid by the local authorities and the Attorney-General may sue and collect the amount from the community that failed to act.

The educational work in regard to the prevention of communicable diseases by the usual means of circulars, bulletins, lectures, etc., has not been neglected.

Only one other feature of our work will be mentioned for fear of becoming tedious. In 1886 there were not more than 25 or 30 local boards of health in the State.

It was simply permissive with councils of cities and villages to establish such boards. No provision was made for the rural districts. Through legislation secured by the State Board of Health we now have 2,124 boards of health or health officers acting in lieu of a board of health.

Politics, and lack of public interest in, or appreciation of the importance of, the work of local health officers has been and still is our greatest handicap to effective health work. Except in our large cities the salaries paid to health officers are still ridiculously inadequate.

It is a discouraging fact that those charged with the two most important functions of the State—the education of the child and the protection of the public health—are its poorest paid servants. Had it not been that health work has been largely a labor of love, and that thousands of medical men have given their best efforts to protect the public against needless disease without thought of compensation, health conditions in Ohio, as in all the other states, would be vastly worse to-day than they are.

There is evidence of a coming change in these conditions. An eminent sociological worker from your State, at the recent meeting of the American Public Health Association, ventured the prediction that in ten years the health department would be generally regarded as the most important division of municipal government. Our advanced thinkers are beginning to realize

the close relation of insanitary conditions and the resulting ill health and premature death of wage-earners, to poverty, vice and crime. They are beginning to see, too, what immense sums preventable sickness is costing the city, the State and the Nation. The economist, and so-called "social engineer," the man who is studying civic conditions with the view to their betterment, are coming to our aid. A private individual has just given a million of dollars to eradicate hookworm disease. The day is surely coming, and is not far away, when the people everywhere will recognize that their most precious interests are in the hands of their health officer, and will gladly give him the credit and reward which are already his due.

Let us then push on with courage, constantly striving, as we are to-day, to better prepare ourselves for the great things that still remain to be done.

COMMISSIONER PORTER — We have all listened with great pleasure to this paper. Is there any discussion of it?

I judge from what the doctor says, that the remuneration of the health officer in Ohio does not materially exceed that paid his brother in New York. I hope soon the competition will be not to see how little they can pay a health officer, but how nearly they can come to paying what he is worth.

The next paper on our program is by a gentleman whose facilities and felicity in dealing with statistics we are somewhat familiar with. In his hands the dry columns of figures adorning a statistical page become animated, brilliant, full of life, and the paper by Dr. Hoffman on Statistics reads like one of Dumas' romances. It gives me great pleasure to introduce Dr. Frederick L. Hoffman.

INFLUENCE OF TRADES ON DISEASE

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Industrial hygiene has for its object the physical well-being of working people, and its sphere is practically all-inclusive of what is comprehended in the industrial system. It is only within very recent years that the vast importance of this branch of preventive medicine has been clearly recognized by the medical profession as a practical problem, but the public interest in the subject has been less active in the United States than in England, France, Germany and other countries. In part this backward condition is the result of the rather exceptional and more favorable social condition of American labor, necessitating a lesser degree of drastic state interference than has been found necessary in the older countries of the world. Most of our factories and workshops are of comparatively recent construction and they have, as a rule, been built with a fair regard to modern standards of light, air and ventilation. As the result of the concentration of industry, many of the older factories have gone out of use or have been rebuilt in harmony with more modern requirements. The better wages, the shorter hours, and the higher standard of living of American labor have also very largely contributed to bring about a better physical condition of wage-earners than is met with in European countries.

It is a readily observed fact of general experience that however intimate the connection of occupational activity may be with the resulting injury to health and life, the problem is enormously complicated by other causes and conditions affecting the general physical well-being of the people. Where wages are comparatively high better food can be furnished, better housing can be secured, more rest and recreation can be had, and in the event of illness better medical attendance is possible, than where the opposite economic conditions prevail. Hence the injurious effects of certain industrial conditions are less serious among a people econo-

mically in a superior position than among wage-earners who work for lower wages, longer hours, and under conditions of life otherwise of an inferior order.

Considerations like these explain in part why industrial hygiene should not have attracted the same widespread interest as the medical profession of the United States which it has attracted in European and other countries, but there can be no question without doubt that, broadly speaking, the conditions of industry inimical to wage-earners' health never have been, and are not now, as serious in the United States as in the older countries of Europe. This favorable position is, however, only comparative, and the conditions in many occupations are far from satisfactory in this country.

The increasing proportion of population engaged in industry also emphasizes the growing importance of this subject. Even during the short period of five years ending with 1905 the proportion of persons employed in manufacturing establishments has increased 16 per cent. But the sphere of industrial hygiene is not limited to manufacturing industries; it includes every employment followed by men, women and children from the earliest years of life to its very close. It includes persons of every degree of physical condition from those in perfect physical health to the physically impaired, defective and deformed. Many occupations which can be followed without injury to health and life by the physically sound cannot be followed without detrimental results by the physically weak, by women or children, or by the aged.

With rare exceptions occupation selection proceeds without a proper regard to physical ability to perform the duties required and in many employments there are persons wholly unsuited to the mechanical tasks which they are required to perform. In the case of women and children this law of physical adaptability receives recognition in modern laws regulating the employment, but even in this respect there is still a vast amount of maladjustment. It would not seem to require an extended argument to prove that small children are wholly unsuited to certain kinds of physical activity and that under no circumstances should such children be exposed to the continuous and considerable inhalation of industrial dust. It would also seem to require no argument to

prove that women must not be employed at work which is beyond their physical strength, or at night, or underground, but only during recent years has legal sanction been given to humanitarian considerations which forbid the employment of women and children in unsuitable pursuits. The fact, however, cannot be gainsaid that the proportion of women in industry is rapidly increasing and that they follow a large number of employments to which, because of their sex, they are not properly adapted, and which, therefore, require statutory regulation, at least as to hours of labor, and the statutory prohibition of night work and work underground.

The United States, in the social condition of its women and children, is immeasurably in advance of European countries, where of bitter necessity they are often employed at arduous or unhealthful occupations at which they have rarely, or never, been employed in this country. Women, with us, have never been employed in mines, at heavy work in potteries, at unloading of vessels, or similar unsuitable tasks. Our respect for women revolts at the thought of even the remote possibility that they may perform heavy manual work as a necessary consequence of an independent struggle for existence. Children have been exploited to a very considerable extent in all countries, but happily indeed, the modern conscience is awakening to social responsibility in this matter and a recognition of the incontrovertible truth that the children are, in fact, the most valuable asset of a nation. At the same time, in the case of both women and children the economic condition of the nation is not such that they can be entirely relieved from their respective share in participating in the industrial processes by which the life of the community is carried on, and even the wealthiest of nations in modern times cannot relieve a large proportion of its women and children from the necessity of active work at tasks suitable to their sex and strength.

The conservation of health and strength is a national problem of far-reaching importance and particularly so in the case of industrial nations which are actively engaged in the struggle for international commercial supremacy. Industrial efficiency is fostered and advanced by the best possible conditions suitable to health and life, and by a most rigid obedience to the principles

of rational industrial hygiene. Every adult male worker represents a valuable national asset which cannot be destroyed without more or less serious injury to the national economy. A considerable amount of capital has been sunk in the production of factory workers or wage-earners of all kinds, partly by parental care, partly by State solicitude in the form of education and otherwise, so that at the age of commencing work a life, broadly speaking, has its highest potential economic value, because so much money, effort and care has been sunk in its production and nothing as yet has been returned. For the State to realize a proper return on the human investment, every year of subsequent lifetime is of the greatest possible economic importance, and to industry itself that value increases in exact proportion to the labor experience gained. Nothing can be more shallow or intrinsically absurd than the argument that one man is as good as another, or that a life lost can easily be replaced, for under modern conditions resulting from the minute subdivision of labor, the average workman of mature years is decidedly superior to a new man who requires, first, to be trained that he may be adapted to his work.

Aside from this purely economic consideration there are, of course, ethical and humanitarian considerations which demand that the most that the State can do shall be done to secure to wage earners not only equality of opportunity, but also the best possible conditions favorable to sound health and long life. Whatever may be said with regard to the reckless and needless waste of our natural resources applies with more than double force to the criminal and inhuman waste of our human resources as is made evident in a high adult death rate from industrial diseases, and in particular from a high mortality from consumption in dusty trades, and the frequency of lead or other mineral poisoning among persons in certain occupations, or finally, in the lamentable and disgraceful frequency of industrial accidents. The waste of these lives imposes a tremendous burden upon the nation which, though unseen and not calculable in dollars and cents, is nevertheless a very material hindrance to our real progress toward the ideal of a really happy, prosperous and intelligent nation. The sorrow which is brought into thousands of homes as the result of the bread-winner's premature death and the dependence of women

and children as the result of impaired efficiency and premature incapacity for work, is so great a burden upon the nation that if it could be even approximately calculated it would stagger the dullest imagination and call for an aroused conscience of mankind to demand a change.

It is, therefore, not without economic and ethical justification that all modern civilized nations have deliberately undertaken the improvement of the conditions under which industrial activity is carried on and the gradual but certain removal of conditions decidedly inimical to the health of the working people. Since the effects of most of these conditions are generally slow in their operation and most insidious in the manner in which health and strength are gradually undermined, the human machine in its imperfect working is neglected, while the mechanical machine receives abundant care and is further perfected in minute detail with remarkable ingenuity. But the wear and tear on the human machine is much more pronounced and serious than in the case of the mechanical machine, since the former is a vastly more complicated and delicate organism than the latter. In the former the parts or the organs which are worn out or injured cannot be taken out or replaced by new organs or parts, as is the case in the mechanical machine, but they are lost forever and human life is correspondingly shortened and terminated at an age often many years before its natural or normal end.

There can be no doubt, however, that mortality has diminished and that there has been a decrease in morbidity, but both mortality and morbidity, among certain classes of wage-earners, are still decidedly above the average, and of no disease is this more true than of consumption. Every trade in which there is exposure to the continuous and considerable inhalation of dust should be made a matter of government concern, so that the factors and conditions inimical to health and life may be reduced to a minimum. At present this is not the case in hardly a single one of the numerous employments in which the death rate from tubercular or respiratory diseases is above the average, and only a beginning has been made in calling public attention to the facts. Small hope can be held out for success in the humane effort to diminish the ravages of tubercular diseases until the evil is attacked in its origin, and pre-

ventitive measures are generally adopted to effectively protect the health of women and children in industrial pursuits. Only a few illustrations are necessary to emphasize the impressive and far-reaching truth of this assertion.

Among men employed in occupations with exposure to metallic dust, at ages 15-24 the proportion of deaths from consumption is 46.5 per cent., at ages 25-34 it is 57.2 per cent., at ages 35-44 it is 42.4 per cent., and at ages 45-54 it is 23.4 per cent. Somewhat similar, though not quite so serious, are the facts regarding men employed in occupations with exposure to mineral dust, which at ages 15-24 causes a mortality from consumption of 31.7 per cent., at ages 25-34 of 47.6 per cent., at 35-44 of 36.3 per cent., and at ages 45-54 of 27.9 per cent. The facts for certain specific occupations are still more serious and alarming. Considering only grinders, the proportion of deaths from consumption at ages 25-34 is 70.8 per cent, against 31.3 per cent. for men in all occupations. That percentage itself is decidedly too high, the excess resulting naturally from the large proportion of persons employed in occupations with a mortality from consumption above the average. Thus among farmers and planters, according to the census mortality statistics for 1908, the percentage of deaths from consumption at ages 25-34 years was only 25.6 per cent. against 35.9 per cent. for draymen and hackmen, 41.2 per cent. for tailors, 42.9 per cent. for plumbers, and 49.2 per cent. for compositors, printers and pressmen.

Facts like these, which cannot be gainsaid, and which are incontrovertible since they are sustained by every qualified investigation into the vital statistics of different trades, emphasize the duty of government and private enterprises to leave nothing undone to reduce the disease liability to the minimum. In particular, however, do these facts emphasize the duty of the medical profession to specialize in the field of industrial medicine and to follow European examples by perfecting the study of disease predisposition in recognized unhealthful trades. While much can be done by preventive medicine there must always remain a large field for the specialist in occupational diseases who shall select for his field recognized unhealthful trades or recognized ill-health pro-

ducing factors seriously affecting the different parts of the human organism to the decided detriment of the body as a whole.

As yet this field is practically neglected in the United States. No qualified and comprehensive treatise on occupational diseases has been written by an American authority, and the fragmentary contributions only emphasize the deplorable neglect of one of the most promising fields in modern medicine. The really valuable literature on occupational diseases is almost entirely foreign, and foremost among the works in English which are deserving of painstaking study are the contributions by the late Dr. Arlidge and the more recent works by Sir Thomas Oliver. While these two writers have taken the whole domain of industrial medicine for their respective fields, there is a numerous body of faithful workers who have specialized in particular fields. I may mention among others the researches with regard to arsenic, by Dr. Malcolm Morris; the effect of employment in ganister crushing, by Hamilton P. Smith; the effect of steel grinding by Sinclair White; the dangers in the use of mercury and its salts, by Dr. T. M. Legge; the effects of employment in the manufacture and handling of copper and brass, by Dr. R. M. Simon; the disease liability in the manufacture of high explosives, by Dr. R. P. White; the dangers of employment in chemical trades, by A. P. Laurie, M. A.; the dangers of working in jute, by Harry J. Wilson; the employment in laundries, by Lucy A. E. Deane; the danger of flax and linen manufacture, by Dr. Purdon; the hygiene of cotton manufacture, by James Wheatley; and many similar researches, most of which have been brought together in a single volume under the title "Dangerous Trades," by Sir Thomas Oliver, who himself has contributed many valuable special articles, in particular on the disease liability in match manufacture, and the dangers of working in lead and its various compounds.

Even more numerous and valuable are the contributions by German authorities on occupational mortality, largely resulting from the duty imposed upon German industry by the government insurance system. The most authoritative treatise on the subject is a handbook on the diseases of workingmen, edited by Dr. Theodore Weyl, who himself has made many and highly specialized inquiries into particular trade diseases. In this work the

diseases of miners are discussed by Dr. Lindermann, the diseases of workmen in lead, silver, zinc and quicksilver, by Dr. Laureck; the diseases of workers in iron by Dr. Roepke; the diseases of metal workers, by Dr. Zadek; the diseases of chemical workers, by Dr. Weyl; the diseases of rubber workers, by the same author; the diseases of gas workers, by Dr. Schuette; the diseases of silverworkers by Dr. Silberstein; the diseases of potters, by Dr. Holitscher; and many others too numerous to be included in this summary.

These are but a few fragmentary references to the vast literature of occupational diseases, which includes but a very few American writers of recognized authority. The most valuable American contribution, partly antiquated but still of considerable value, having been printed in 1895, in *The Twentieth Century Practice of Medicine*, is the contribution by Dr. James Hendrie Lloyd, of Philadelphia, who emphasizes in particular the importance of industrial poisonings, but he includes observations on the effects of dust, tobacco, compressed air, bad sanitation and ventilation, etc. Of course there are others, but their writings are chiefly compilations of foreign data and only a beginning has been made in original research.

I mention these few to indicate the importance of the subject and to emphasize the vast, though as yet hardly recognized, possibilities of qualified research in the field of industrial medicine in the United States. In exact proportion as the evil becomes recognized will remedial measures be demanded and the recognition of the evil and its relation to the community at large must necessarily come through the medical profession, qualified to establish the facts with at least approximate accuracy for the practical needs of the present time.

The first step in the direction of a deliberate and rational policy of industrial hygiene is the appointment of qualified medical factory inspectors in conformity to the English and continental practice of the present day. Only by qualified medical supervision of factories can the conditions productive of diseases be brought to light and can remedial measures be proposed, which in the end will do away with conditions decidedly and unquestionably detrimental to the health and life of wage-earners at the

present time. Only through such supervision can the experience be gained, which in its nature must extend over many years to trace with unerring accuracy the true incidence of disease-causing conditions, which are, as a rule, extremely slow in their effects on the human organism and which ordinarily escape attention. The facts of most importance are, therefore, rarely made a matter of official record. Only by such medical supervision will death certification be gradually improved so that the actual occupation of the deceased, as well as the true cause of death, shall be recorded, and if the facts warrant it, be brought to public attention. Under the present method of death certification there is no question of doubt that some of the most important facts bearing upon problems of industrial hygiene are not made a matter of official record, since in the classification of deaths preference is of necessity given to the immediate rather than to the remote cause of death. This, for illustration, explains why we have so few recorded deaths from fibroid phthisis, which is a true occupational disease, or from lead poisoning, which is often the remote cause of deaths recorded as due to kidney, liver and other diseases.

Medical supervision of factories would be productive of substantial good in other and even more important directions in that qualified medical advice would suggest remedial measures for the improvement of ventilation, the securing of better light and air conditions, the effective removal of industrial dust, and the mitigation of evils arising out of the presence of noxious fumes, vapors, etc. All these matters are extremely complex in their inter-relation and they involve perplexing problems to the employer as well as to the State. Manifestly State interference with industry must proceed upon extremely cautious lines so that the industrial activity itself is not seriously hindered, since its abrogation would be an even greater calamity than premature disease and death to some of the workers themselves. At the same time, however, in the light of a vast experience the truth cannot be denied that very considerable improvements are possible without much cost or hindrance to industry itself. In fact, most of the evidence which is available proves conclusively that the benefits resulting to various industries from the improvement of the health of employees by the introduction of methods or conditions under which

such industries are carried on, have far more than repaid the original expense of installation by the larger unit product of the persons employed. While this conclusion cannot always be substantiated it is nevertheless a valid inference that workmen in the best of health must be better producers than those in inferior health, of weak constitution, and diminished physical strength. This is so self-evident a conclusion that it requires not to be sustained by statements or other proof.

It would carry me entirely too far to discuss all the elements of the problem, but I at least may enumerate the most important. Among the detrimental conditions of industry which require medical supervision and medical inquiry are the effects of excessive labor, chiefly on the part of women and children, and of young persons apprenticed to employments possibly beyond their physical strength. The principle has been established for at least some employments that a medical examination must determine the fitness for the occupation to be followed, and this principle in time may be extended to all employments, including re-examination from time to time to determine whether the employment has been followed by injurious consequences sufficiently serious to demand a radical change.

The time may come, and I trust that it will come, when workmen will voluntarily submit to such re-examination on the part of such qualified experts in industrial medicine, so that a word of caution at the proper time may be the means of saving valuable years of life for the benefit of the individual and the community as a whole. Such an examination or re-examination would suggest the importance of a change of occupation in many cases where men now follow one particularly unhealthful trade for most of the years of their active lifetime. It may come about that men will realize that the more dangerous employments should not be followed by any one for a lifetime, or at least not successively for any considerable length of time. Employments which are serious in their consequence only when continuously followed for a long time may be found to be comparatively harmless when followed for only comparatively short periods. It should be found practicable in such employments to shift the employees from the most dangerous to the least dangerous, and *vice versa*, to reduce the

evil effects of exposure to industrial dust or to industrial poisons to the minimum. If an effective method of medical supervision of factory conditions and the health of factory workers produced no results other than these, the system would fully justify itself.

Other detrimental conditions to health in industry include physical and mental overstrain, excessively repeated muscular action, and bodily fatigue, which is made manifest in the higher degree of accident frequency in the afternoon than during the morning hours of work. Overstrain, or overlifting of heavy burdens, is not done away with even where machinery is extensively used and cases of hernia are still distressingly frequent, but the extent of internal injury is not a matter of official record. Among boiler makers and riveters, as the result of the general use of automatic riveting machines, we meet with serious consequences resulting from the effects of concussion of the air, but the actual extent to which workmen of this class are affected is not at present a matter of record. The modern development of tunnel and underground construction has largely increased the number of workmen exposed to the dangers of compressed air, corresponding in part to the well-known risks attending the occupation of divers, who as much as any class of men are exposed to conditions detrimental to health. These are but brief illustrations of the dangers which surround the modern workman and which have resulted in quite different disease and accident risks in industry from the corresponding risks and conditions of an earlier date. Over most of these conditions the workman himself has but a very slight degree of actual control, and while a decided improvement is possible by the intelligent co-operation of master and workman, the fact remains that the consequences to health and life fall upon the employee alone.

Every occupation, however, furnishes a field of profitable medical inquiry, for the ramifications of modern industry and the manner in which industrial operations react upon the health and lifetime of the workman are practically endless. Of no employments is this probably more true than of the large group of workers exposed to gases, vapors, high temperatures, etc. While much has been written regarding the liability of underground miners to accidents from explosion, very little indeed is known with ac-

curacy regarding the health-injurious consequences of underground work, including the serious effects of coal dust inhalation and of gases and noxious vapors of all kinds met with in the different branches of coal and metal mining. Practically nothing is known with accuracy regarding the health-injurious consequences of employment in the numerous chemical trades, and our present information is limited almost entirely to English, German and other continental sources. The subject, however, is certain to attract more attention in the future, with the increasing development of the mining, smelting and chemical industries in the United States.

The effect of metallic poisons, dusts and fumes is another large subject of inquiry, where more progress has been made, chiefly because of the frequency of lead poisoning in potteries, white lead works, smelters, etc. While the disastrous effects of smelter fumes on the surrounding vegetation are well known and have led to much costly litigation and drastic State interference with industry, the corresponding effects on the human organism of fumes and vapors generated during the different kinds of smelting processes are but at best imperfectly understood. The actual degree of frequency of lead poisoning in the manufacture of pottery, cut-glass, etc., is not a matter of official record, but it is in every way desirable that the United States should follow the example of England and the continental nations, and to require notification of all cases of industrial poisoning, at least of those occurring in large establishments. It is even more difficult to trace the frequency of lead poisoning in the case of painters, who, as a rule, follow individual pursuits, but there can be no question of doubt that the insidious effects of such poisoning are much more common among painters, typefounders, and others exposed to its dangers, than is generally assumed. Among similar occupations with exposure to metallic poisoning mention may be made of brass founders, who suffer from a distinct occupational disease known as "brass founders' ague," but the frequency of this malady in this country is unknown.

In all of these occupations there is the imperative necessity of personal cleanliness on the part of the workmen, and of well ventilated workshops, with adequate facilities for the escape of fumes and the effective removal of industrial dust. As pointed out by Sir Thomas Oliver, in all such employments hot and cold water

should be provided for the men to wash in, and the workshops themselves should be thoroughly cleaned at least once a year. The workmen should be provided with milk as a prophylactic as well as curative agent against the various kinds of industrial poisoning to which they are continually exposed. The use of respirators may no doubt very often be inconvenient, but it should nevertheless be insisted upon as perhaps the most effective safeguard against the inhalation of noxious vapors, fumes, gases, and injurious dust.

The very complexity of the subject precludes its adequate consideration by the layman, but the mere outline of general industrial conditions injurious to health and life re-emphasizes the necessity of medical supervision of factories and the medical examination and re-examination of workmen employed in dangerous pursuits. Every trade from the indoor or sedentary occupations to the outdoor life of the farmer and the hunter's guide presents peculiar occupational dangers which have their medical as well as social aspect, demanding the practical interest of all who are interested in the well-being of their fellowmen. Any single occupation selected for the purpose of illustration would perhaps more clearly bring out the salient factors which demand consideration, but no occupation presents dangers and conditions which are exactly typical of the whole. Perhaps the most serious consequence to health in industry is industrial dust, and if anywhere State interference is warranted it is in the intelligent regulation of industrial processes giving rise to dust inimical to health.

Every trade, however, requires separate and distinct consideration, and accordingly the rules and regulations adopted by foreign governments for industrial disease prevention vary, since they arise out of the conditions themselves under which industry is carried on. The elaborate rules adopted by German industrial accident associations for the prevention of injuries, and the corresponding rules adopted by sickness associations for the prevention of industrial diseases, are deserving of careful study as perhaps the most effective measures designed to protect the health of men and women employed in industry. The corresponding Home Office regulations of the British Government include numerous injurious occupations such as bichromate works, brass mixing and casting, chemical works, earthenware and china manufacture, enameling of

iron plates, electrical accumulator works, explosive works in which dinitro-benzol is used, flax spinning and weaving, red, white and yellow lead works, lead smelting works, lucifer match factories, paint and color works, extraction of arsenic, skin and hide sorting, tinning and enameling of iron ware, vulcanizing of India rubber, wool sorting and combing, etc. The German regulations include sugar refineries, cigar factories, brush-making works and horse-hair spinning, letter press writing, basic slag works, wire-drawing mills, etc.

All of these regulations are based upon painstaking inquiry into the actual conditions under which industry is carried on and they have been carefully designed to cause the least possible interference with necessary industrial processes and at minimum expense. They are the result of a humane policy of labor protection but they also have minimized employers' liability for workmen's compensation on account of industrial diseases. While under the English law of 1906 the term "industrial disease" has as yet a very limited significance, it is certain to be enlarged in the course of time under the authority given to the Secretary of State to bring diseases clearly the result of industrial activity within the meaning of the act.

The progress which has been made in this policy of labor protection will not stop at its present stage, but will continue until every detail has been perfected and every industry brought within the scope of effective factory supervision and control. The annual reports of the factory inspectors of the United Kingdom are models of their kind, to which we have nothing to correspond in the United States at the present time. The medical inspection reports on industrial conditions and the elaborate inquiries which have been made under medical supervision into industrial processes injurious to health are of such a self-evident, practical value that corresponding methods of inquiry, in course of time, are bound to be adopted over here. Our system of factory inspection has no doubt been productive of much good, but only a small beginning has been made in securing the best possible results. Not until factory inspection is made partly a medical function, and not until factory workers engaged in decidedly health-injurious employments are subject to medical supervision, will there be a decided improve-

ment in the health of our workmen, which is as much a State duty as the protection of women and children in industrial pursuits.

It is no doubt a difficult task to establish positively and clearly the direct causes of ill-health in industry, and of premature invalidity or incapacity to work, but the evidence is entirely sufficient to warrant the conclusion that to a large extent the health of our wage-earners is undermined by working conditions which are subject to a material improvement. We know, as a matter of fact, that the most important causes of invalidity, or incapacity to work, or in other words, of physical impairment, are tuberculosis of the lungs, and the large group of respiratory diseases which, among others, shorten the lives of potters, glassworkers, stonecutters, etc. We know that next to these a most important factor is muscular rheumatism, followed by diseases of the heart and the circulatory system. We know that in many industrial processes eye-strain is a serious factor, impairing not only the visual function but causing nervous, digestive and other serious bodily disturbances as the result of occupational activities. Many employments are also the direct cause of digestive disturbances, chiefly, of course, where metallic poisons in the form of dust, fumes, vapors, etc., are inhaled into the system or introduced into it otherwise by personal uncleanness or indifference, but all such afflictions are the direct consequence of industrial activity, which can be safeguarded against only by stringent rules and the intelligent co-operation of workman and master in the use of all reasonable safety precautions.

The ultimate social and economic value of deliberate and rational measures for the prevention of industrial diseases and the resulting impairment in industrial efficiency and wage-earning capacity, would be enormous. Briefly, by way of illustration, the difference in the mortality rate of workmen employed under comparatively healthful conditions and of men exposed to unhealthful conditions, are sufficient to account for not less than one-third of the average adult death rate at the present time. For illustration, at ages 25-34 the death rate of farmers and agricultural laborers, according to English statistics (for there are no corresponding data for the United States) is 3.96 per 1,000, for printers the corresponding rate is 6.46, and for cotton workers it is 5.48; at ages 55-64 the death rate for farmers and agricultural laborers is 20.25, for

printers 30.76, and for cotton workers 41.15. These illustrations can be multiplied in the case of a large number of more or less unhealthful trades, but they sustain the conclusion that the field for industrial hygiene is indeed one of the most promising, in far-reaching consequences, of all the various endeavors at social amelioration of the present time.

What is true of mortality is even more true of sickness, but unfortunately our data are less satisfactory and the true facts can only be determined by a qualified and thorough inquiry into the whole subject of industrial diseases. According to German statistics, at ages 20-29 out of every 100 male wage-earners 29 were incapacitated on account of sickness during the course of a single year; at ages 30-39 the rate was 35 per cent., increasing to 40 per cent. at ages 40-49, and to 48 per cent. at ages 50-59. For wage-earning women the sickness rates were 31 per cent. at ages 20-29, 36 per cent. at ages 30-39, 33 per cent. at ages 40-49, and 40 per cent. at ages 50-59. Naturally, on account of the larger number at work the data for male wage-earners are more conclusive.

For Austria, corresponding data show that the percentage of sickness was 42.3 at ages 15-20, 43.6 at 21-30, 47.4 at 31-40, 52.6 at 41-50, and 58.8 at 51-60. The range of sickness, however, for the different occupations varied from the comparative sickness figure of 46 in the case of clerks, and 56 in the case of tailors, to 170 in the case of men employed in chemical works, and 183 in the case of men employed in smelting and reduction works. Among women the most unhealthful occupations were employment in the manufacture of matches, clay and pottery works, and tobacco works.

The duty of government in the vast field of industrial hygiene is, therefore, no longer an academic question but a problem in practical politics of the greatest possible importance. Wage-earners are rightfully entitled to the best possible conditions under which productive industry can be carried on, and this comprehends the voluntary or compulsory introduction of all reasonable methods and means by which the conditions inimical to life and health in industry can be reduced to the minimum. Factory legislation, to be thoroughly effective, must, however, be based upon a thor-

ough knowledge of the actual conditions under which industry is carried on, while every protective measure must be framed to enlist the hearty co-operation of employees to make the same thoroughly effective. To be productive of the best results all factory legislation which has for its object the conservation of health and life in industry must be based upon sound medical considerations to bring the particular provisions of the law into harmony with the most advanced and thoroughly qualified medical judgment of the day. Other governments throughout the world have utilized expert medical opinion in matters of this kind, and it is of the utmost importance that all future labor legislation bearing upon questions of health and life in this country should also be based upon thoroughly qualified medical opinion.

Medicine as a healing art is no longer the sole function of the medical profession, but the vast domain of preventive medicine offers immense opportunities for useful and remunerative work to medical men of ability who may specialize in this field of useful research and beneficent employment. In this direction there lies the most promising future for the medical specialist trained in the science and art of industrial hygiene. Whatever contributes to the raising of the physical well-being of the race is not only a humane duty but the most practical aid toward the ideal of attaining the highest degree of individual and social efficiency on the part of the millions of toiling men and women who make up the best and the most that constitutes the mass of mankind.

COMMISSIONER PORTER—This very earnest and impressive paper by Mr. Hoffman may well serve to stimulate our interest in this important subject, and cause us to give it that consideration which matters of importance demand. The discussion on this paper will be started by Dr. Charles C. Duryee, of Schenectady.

DR. CHARLES C. DURYEE—I have been intensely interested in this paper. I wish it might be that a copy of it might be in the hands of every employer and every man who earns his bread by the sweat of his brow. It is a subject which has been brought to the attention of many health officers in the last few years. It happens that in the city from which I come, that some attention has been paid to these very things. They have not been forced by law, or by the health officer, but they have been the contributions of the managers of those works, which are located there. The General Electric Company which employs 16,000 or 17,000 men—think of massing such a number of men in one plant—has done everything and is now doing it, so that an American workman may have fair, hygienic conditions under which to labor. They have started with dust machines, and if you go to the works of the General Electric Company, you will see the best application of the

principle of dust extraction which you can find anywhere. They deal, among other things, in porcelain, and the inhalation of dust from these objects is something exceedingly great, and it is very hard on their workmen, and you should see the machine they have installed, to take this porcelain dust out of the air. Their toilet accommodations are the very best. They have individual wash basins for every man in the house. Each man has his own wash basin, soap and towel.

There are a number of other things which show you that these managers recognize that if they are to keep good men, they must make proper conditions for them.

I said one year ago to the manager, "This has cost you a great deal of money." He said, "Yes; but it is a good investment."

I believe if such a paper as this were put in the hands of men who control men, in the hands of legislators, we would get up a campaign of education on that line, the results of which would be as great as those in the campaign of tuberculosis. I believe, Dr. Porter, this is one of the most valuable papers I have been privileged to hear.

DR. PORTER — We will now hear from Dr. C. H. Glidden, of Little Falls.

DR. C. H. GLIDDEN — It has been a great pleasure, I am sure, to all of us to listen to these papers, and I felt when Mr. Hoffman sat down, that we were in the position of the gentleman from Ohio, that it would be easier to say what we had not done than to say what we had done. However, it was my privilege to be a student in this city, in the office of an old gentleman, Dr. Edward M. Lowell; and while I was there, he was appointed a member of the first State Board of Health. So I have witnessed the evolution of reforms so far instituted in this State. I can assure Mr. Hoffman that we are trying to do something to reform the very conditions he speaks of.

In the little city in which I live, within the past two years, two large factories have been erected, and the sanitary condition of those factories is excellent. I mean comparatively so. Of course, I do not mean to say there is no room for improvement. But in place of the factories such as we had at Little Falls, surrounded by heaps of old rubbish, ashes, lumber, and so forth, they are a very distinct and decided improvement. Instead of those we now see lawns and flower beds and everything attractive to the eyes. Inside we see pretty fair, only fair, sanitary conditions. Much yet is needed in that respect. But I was pleased to hear Dr. Duryee talk of the efforts and the work of the General Electric Company at Schenectady. I know whereof I speak when I refer to the conditions at Little Falls, as I have been particularly interested in the bureau of health at Little Falls. The new factories are pretty good.

But, as Commissioner Porter said: It is purely a question of education. The health officer is powerless to get above public sentiment. When the people demand it, we will get sanitary reforms; and until they demand it, we must do the best we can.

I want to emphasize the fact that as health officers we are powerless to enforce sanitary conditions beyond what the people demand. The Health Department is doing a great deal to help us.

COMMISSIONER PORTER — Dr. Rogers, of the Department of Labor, will now discuss the paper.

DR. GRAHAM ROGERS — Mr. Hoffman published an exhaustive treatment for the Federal Government regarding dust.

I think we should look to home conditions and give credit at home where credit is due; and that we need not go abroad for statistics. For two years the New York State Labor Department has had a medical inspector of factories. Last year, the Commissioner of Labor, in his annual report to the Legislature, presented a report of the medical inspection of factories, with some elaborate tables of carbon dioxide obtained in factories, and so forth. Those tables upset many theories and plans advanced by sanitary engineers. The result is considerable work has been done among the factories in the State of New York along the line of ventilation which is probably one of the best lines to overcome that.

There have been sections of law to cover dust-creating machinery, and the Department of Labor requires the removal of dust by exhausting fans.

In Massachusetts there are fifteen inspectors. The work is complex, and those inspectors have taken up conditions in the factories and published reports. In the June Bulletin of the State Department of Labor is a report of a special investigation as to the calico print industry of this State, the method and process from the time the muslin goes into the mill until it comes out print goods. And besides, the State Labor Department has been securing for the past two years physical records of children in factories. In Great Britain there is a medical inspector. In Belgium they have a chief medical inspector, with a number of inspectors and a laboratory. In France they have none, but they have health officers. In Germany they have health officers. In Holland, the same.

But we have different conditions here. We cannot go into these places and overhaul things as we might wish. How many of these conditions in factories classified as "deaths from tuberculosis" are not properly traceable to the factory, but to the home and housing conditions of the employees. Those things must be taken into consideration. Do not place all the blame on the factory owner. I believe in Dr. Hoffman's work, but New York State is doing something; New York State is the first State in this country to do it, and I think the work can compare favorably with the work done in other countries. New York State is not having a band to attract attention, nor is it making any grand-stand play, but it is going ahead, doing steady work. But of course this takes time. The Bulletin of the Department of Labor is published quarterly. We have no authorities here in this country, but that is because no one has been taught. But eventually we will arrive at morbidity statistics. We do not want mortality statistics, but morbidity statistics. If the industry is the cause of disease, then it is easy to get at the disease. Let us have preventive medicine, and that can only come through proper statistics.

It has been my plea for two or three years to teach industrial hygiene, and have medical officers teach it, and try to get the best results from it.

COMMISSIONER PORTER—In conclusion, my friends, it seems to me that enthusiasm in a good cause is a good thing and I trust it may never grow less: but we must have statistics to show the results of prevailing conditions. You can take insanity, pauperism, crime, and avoidable and unavoidable accidents; and when you come to the final summing up, you can charge it to the medical profession; and not one of us can stand before the bar and plead "Not guilty"; and yet that indictment is subject to a reasonable argument before the verdict is given.

It is well that Mr. Hoffman presents an earnest paper on this subject, where sanitation is so particularly needed, and where good work would undoubtedly be done. Something which most of us have already considered, and which the departments of the State, represented here to-day, have already taken up; and yet it remains true that these other matters can be charged against us as this subject which Mr. Hoffman has brought out. It is well it was brought out at this Conference, and it arouses us to work, and it revives the belief that not only the reform Mr. Hoffman demands at our hand shall become practical, but other matters which seem Utopian to-day will be the practice to-morrow.

Gentlemen, I think we have had a very auspicious opening to our Ninth Annual Conference. This evening, we will have the president of Rochester University with us, and Dr. Sedgwick, our good friend from Massachusetts, who will have an important and interesting address, and I hope you will all be here at 8 o'clock sharp this evening.

We will now adjourn until 8 o'clock this evening.

WEDNESDAY, NOVEMBER 10, 1909

SECOND SESSION, 8 P.M.

Public Meeting

Presiding: HON. JOSEPH T. ALLING

MR. ALLING — Ladies and Gentlemen, it is my pleasant task to-night to call this meeting to order and to preside over its deliberations, and to introduce the speakers. I am asked to do this as the representative of a body of ladies and gentlemen in this city who are helping in the fight for public health.

We are more than glad to welcome to the city you who are the health officers of the State, because your coming adds not only to the fund of knowledge that comes from deliberation and comparison of ideas, but it adds to the education of this community, which is fortunate enough to have in its midst these meetings.

It is a most significant fact that the way in which public interest is growing, not only in the healing of disease, but in the prevention of sickness, and it is along that line that the association of which I have the honor to be president, the Rochester Public Health Association, is striving to extend its work.

Ladies and Gentlemen, most significant is that tendency throughout the profession. It is not limited to the medical profession. We strive to prevent fires now, rather than let them get started and put them out; and we strive to prevent accidents by putting gates around the elevators, rather than healing those who have been injured by falls. The great advantage made in the care and prevention of communicable disease have taken that form. The fight now is to ascertain the form of yellow fever's origin, so that we can prevent rather than cure it. For a health officer to occupy himself with trying to kill mosquitos, instead of preventing their growth, is now considered a mistake; and yet those who have followed the matter up found that the destruction of the mosquito was the salvation of the community. Ten years ago this would have been considered ridiculous. But it is for you gentlemen connected with the Health Department of the State, it is to you and not to voluntary associations, it is to you officials who are placed in charge of the health of the communities where you reside, that we must look to for effective work. You have a great and a very important mission. Consider in how many ways you touch the community. It is not merely in the economical waste, by the prevention of disease; but the tragedies which come into lives and into homes which by your zeal and care you may prevent. Think of the saving! The difficulty is to know how many might have died if you had not done your work well. But I think every man who is doing his best in the community to protect the public health has a right to feel that he has kept comfort in many homes where death would have precipitated the breaking up of the home and the introduction of everything that was evil. I am sure then, we, who are not in the official class, but who are interested in the public health, with you who are health officers, are the picked men of your community, and no matter how in other departments political considerations shall prevail, in your department nothing shall prevail but the welfare and the health and the betterment of the community.

But I was not asked to preside for the purpose of making a speech. We had hoped to have with us his Excellency, Governor Hughes, but I have a letter in which he says, "I regret very much that I will be unable to attend the Convention of Health Officers at Rochester. I am overwhelmed with

work, and cannot go to Rochester at that time. With best wishes for the success of the meeting, I am, very sincerely yours, Charles E. Hughes."

We have with us, however, those who can speak with authority on the subjects they have chosen, and the first speaker of the evening is the gentleman holding the position of Health Commissioner of the State of New York, and it is with great pleasure that I introduce to you Dr. Eugene H. Porter, who will speak on the subject of "Public Health Problems."

PUBLIC HEALTH PROBLEMS

BY EUGENE H. PORTER, M.D.

State Commissioner of Health

In a notable discourse recently delivered the Bishop of Michigan most forcibly portrayed some of our national vices and sins.

In keen and searching inquiry he laid bare as with a scalpel, the coarse and crude materialism of our industrial lives, the lowness of our ideals, the increase in material wealth which has too often resulted in human filth. And as he said "when one sees the moral degenerates we are producing in our so-called "high life" and the hordes of practical savages we are breeding in our slums it looks as if our civilization was becoming like Ephraim in the prophet's figure" a cake not 'turned,' burned and blackened with over-indulgence on one side and raw and sodden on the other."

So materialistic are we that we fail to distinguish between bigness and greatness. Bigness is a material quality. It belongs primarily to things. It can be measured by the tape line, bought by the ton or reckoned by figures. Greatness is a spiritual quality. It can neither be measured, weighed nor counted. It is made up of moral and ethical elements.

We commonly speak of New York or Philadelphia or Chicago as great cities. Big cities they undoubtedly are — big in population — in huge buildings — in miles of streets — in vast commercial enterprises. But are they great cities? Ah! the greatness of a city is to be determined by another category of qualities. What is the city doing for its citizens? Has it a live civic consciousness? Is the government wise, honest and efficient?

IS ROCHESTER A GREAT CITY?

Is it by its care of sanitation and the public health, by its parks and playgrounds, its social service, making possible for all its children a clean, wholesome and joyous existence? Is it reducing in any degree the awful waste we see on every side by means of

wise and noble measures for the uplift of the fallen, the care of the deficient, the cure and prevention of moral evils? Is it giving the life of its citizens new meaning, capacity, interest and inspiration? That city alone, said the Bishop, is really great, which greatly serves human life. Mark the definition of the Bishop and note how closely it approaches to the modern conception of sanitary duty. Sanitation is humanitarianism. The motto on the flag is "The welfare of our fellow men." That is about all there is of sanitation, but the proper interpretation of the motto may require some hard thinking.

Sanitary science of to-day is the inevitable result of a most remarkable evolution. As it has developed and its principles have become firmly established it has been more and more clearly perceived that its art and philosophy extended beyond the individual, beyond groups or classes, over all artificial limitations and included in its wide domain all that made for the betterment of humanity. It is concerned with the moral and ethical as well as the material, for the highest and most significant expression of sanitation points directly to the highest plane of living.

The old days and old conceptions of disease and health are passing away. The beliefs, selfish and ignorant, that human beings could be crowded into humble houses destitute of light and air, reeking with filth and swarming with vermin, to die like vermin; that men and women must work more hours each than flesh and blood could bear; that children should be dwarfed and maimed by cruel labor; that the distressed and destitute must protect themselves against not only want but against the fatal diseases caused by man's ignorance, greed and inhumanity; these beliefs are passing away. The old way has cost more lives than all the wars since Alexander, and more gold than has ever been mined. Slowly the lesson has been heeded. We have been led to more general concepts and away from the limitations of earlier prejudices and antagonisms.

In new situations vigor and enthusiasm construct a higher ethics, the practice of which elevates the plane of living. Now this drift of scientific, and to a very appreciable degree, also popular opinion, can mean but one thing. It means that sanitary science has in its process of development become a practical

science and that it is now recognized as such. We have learned that if we allow our neighbor to wallow in filth we must expect to suffer some of the consequences. We have learned, too, that we improve society when we improve its individual members. Every expansion of human intelligence has proved of advantage to society and all the great advantages in the social condition have turned to the profit of humanity.

Fix it firmly in your minds then that sanitation meets with life at every angle. Throughout the tangled web of our civilization the threads of sanitary science run in increasing numbers. No serious problem affecting society, whether it be social, economic or political, can now be considered without reference to the sanitary relationships existing.

In order to show the definiteness and complexity of these relationships I wish to briefly present to you four distinct problems, four separate fields of endeavor, each of high importance, not apparently connected, and yet as we shall see finally bound firmly together in the web of the requirements of an advanced and progressive sanitary science.

The first of these we may term an economic and industrial problem; the second a civic and educational problem; the third a political and social problem and the fourth a medical or experimental research problem. In all of these we shall see how imperative and vital is our interest.

For I conceive that I should utterly fail in this, the high privilege of bearing you a message, should be found wanting in the greater things of our profession, should I fail to attempt to make clear to you the real scope and power of a public health administration.

It is not in the draughting and approval of plans for systems of sewerage and sewage disposal plants, important though these may be; it is not in mere purification of streams and the establishment of filtration plants, necessary as these are; it is not in the routine collection of vital statistics, essential as they are; it is not in the chemical and bacteriological examination of water, milk and sputum, a labor of daily and hourly demand; it is not in these things alone, important and essential as they are, that the real power and scope of any public health administration resides.

It is rather in that clear and illuminating conception of great duties and great opportunities that showing through the shell of routine shines with full radiance on the intricacies of diverse relationships. It is this side of public health administration — that leading from the material to the ethical — from bigness to greatness that I desire to call your attention.

INDUSTRIAL HEALTH

And first I will quote from an able article by my friend Mr. Edwin Björkman in *World's Work* on "What Industrial Civilization May Do to Men."

"Of the fearful conditions under which most of the work is done; of the deafening noise and parching heat in the steel mills; of the stifling steam and scorching doors in the laundry; of the undulating dust that breeds throat and lung troubles in stogie sweat shops and steel mills alike; of the neck-breaking application demanded from the man who tells the exact moment for pouring the metal by the color of the flames above the converter; of the soul slaying routine that requires a girl in the toll-works to repeat the same set of movements 16,000 times in ten hours, I cannot speak in detail here. The worker grows gray at thirty-five and the girl worker never lasts more than six years." During the year ending June 30, 1907, industrial accidents led to the killing of 526 men. Every four hours a man is so seriously injured as to require prolonged hospital treatment; once in twenty-four hours a man is maimed for life; once in twenty-four hours a man is hopelessly disabled and once in every sixteen hours a man is killed. The places where most of these workers, 80,000 in number, live are filthy and indecent beyond belief. It is estimated that the loss of this wanton waste of life is not less than \$5,250,000. To correct these monstrous industrial evils, to abolish these crimes against humanity, the first great power invoked by the writer is the present sincere and efficient health officer of Pittsburgh. That is to say sanitation — the application of the modern practical methods of sanitary science. The second helpful agency appealed to is the united effort of a group of strong, intelligent, public-spirited men educated in sanitary affairs and working *with* the constituted authorities. In time this effective combination of

forces will radically reform the existing condition. Did you note the title of this paper "What Industrial Civilization May Do to Men?" In a conversation with the writer before the paper was written, Mr. Björkman said that this and other similar articles were to be contributory to the cause of general sanitation and one of the main objects would be to bring out clearly the economic folly — the huge cost both to the employer and the public of ignoring the plain teachings of sanitary science. It is the first series of papers based on such a postulate ever written. Ten years ago in its practical application it would have been unintelligible to most readers.

The Physical Basis of Citizenship

Some little time ago a boy fourteen years of age from one of the public schools in a large city, was taken to a psychological laboratory for examination. For seven years he had been the despair of his teachers. He was a chronic bad speller. This does not mean he misspelled some words sometimes. He misspelled every word always. His reading was as bad as his spelling and he was absolutely incapable of getting through a single sentence correctly. His case seemed hopeless. The result of the examination was the discovery that the boy had an ocular defect, never in all these years so much as suspected by his teachers or parents; at the distance of about three feet the boy saw everything visible. He lacked the power to direct the two eyes co-ordinately upon the same points in space, the left eye looking a little higher than the right. A page of ordinary print was thus a blur; whenever he attempted to write the words doubled under his pen. Seven years in the schoolroom and nobody had discovered that the boy could not see!

In October, 1907, the New York State Department of Health sent out cards for testing eyes, with instructions for their use, to 446 incorporated villages. Results from 415 schools showed that nearly half the children had optical defects.

The most extensive inquiry yet made in the United States as to the physical condition of school children is that conducted by the Board of Health of New York city since 1905. From March, 1905, to January 1, 1908, 275,641 children have been examined and 198,139, or .709 per cent. have been found to have defects.

Taking these figures as a basis as to eye defects, enlarged tonsils, bad ears and decayed teeth, then the army of children needing attention throughout the United States would be seven out of every ten, or over 14,000,000. Whether these overstate or understate the truth the health and school authorities of the country should find out. The only *new thing* about the physical defects of school children is not their existence but our awakening to their existence, their prevalence, their seriousness if neglected and their cost to individual children, to school progress, to industry and to social welfare.

The best index to community health is the physical welfare of school children. The only index to community conditions prejudicial to health that will make known the child who needs attention is the record of physical examination. The child then as well as the steel worker or the girl drudge has health right. And so the truest index to economic status and standards of living is health environment. The best criterion of opportunity for industrial and political efficiency is the conditions affecting health.

Alcohol and Health

We have noted the definite relationship between sanitation, industrial workers and school children. Let us see what it has to do with another great and perplexing problem. In presenting to you the conclusions I am about to offer I claim absolutely no originality. I have knowledge of their weight and authority and I believe them to be true. I may add that I have given to the matter considerable study with a resultant increase of my conception of its importance.

Alcohol is a definite chemical substance which has certain well defined effects upon man's physical and mental faculties. What are these effects? For twenty years a number of the leading physiologists and psychologists have been working to accumulate accurate knowledge concerning alcohol by direct experimental study. I will try to give briefly the results of these investigations using largely conclusions as given by Professor Rosanoff of Clark University. What is the authority of the evidence? Exactly the same as that of the evidence of investigations in physics or chemistry. It is the authority of the experimental method of modern

science. In no sense am I to be considered as either a friend or foe to alcohol. My function is simply to present certain facts which point to inscrutable conditions or results and to make clear the responsibilities and duties of sanitary science in the light of this knowledge.

1. *Alcohol Without Food.*

Unlike an ordinary food alcohol when taken in moderate quantity on an empty stomach has two distinct effects on the muscular system — a strengthening one and a weakening one.

During the first brief stage after it is taken, the strengthening effect predominates, the alcohol probably being used as a food by the exhausted body. But no sooner is the first stage over than the weakening effect becomes more prominent, the alcohol probably acting injuriously upon the nervous system.

2. *Alcohol With Food.*

Moderate amounts of alcohol taken with a meal effect a very considerable lessening of the capacity for doing muscular work. The widespread notion that moderate drinking with meals helps a laborer to do his work is false.

3. *Alcohol and Working.*

Moderate drinking retards to a very considerable degree the activities of life that are intermediate to complexity between purely muscular and physical work. The widespread notion that a drink "braces one up" and makes one do such work faster is false.

4. *Alcohol and the Handicrafts.*

Moderate drinking reduces considerably an artisan's efficiency. Its effect is cumulative and the losses caused by it increase as time goes on. The widespread notion that moderate drinking helps an artisan in his daily work is false.

5. *Alcohol and Habitual Association of Ideas.*

Moderate daily drinking reduces considerably the rapidity with which habitual associations of ideas are formed in the mind. The

effect of alcohol is cumulative and increases rapidly as time goes on. The notion that alcohol stimulates a person to his mental work is not warranted by facts.

6. *Alcohol and Free Association of Ideas.*

Free associations of ideas are affected by moderate daily drinking even more than the simpler habitual associations. The effects of alcohol on free association of ideas is cumulative.

7. *Alcohol and Memory.*

Ordinary memorizing is greatly retarded under the influence of moderate daily drinking. This conclusion has been doubly corroborated.

8. *Alcohol and Disease.*

Fatty degeneration of the heart, calcification of blood vessels, various forms of fatal liver and kidney diseases, numerous and important nervous diseases, susceptibility to acute infections, decreased resistance to pneumonia and other diseases, and a positive and pronounced ally of tuberculosis.

Investigation further shows that alcohol is responsible for one-fourth of the inmates of our insane asylums, for two-fifths of all abandoned or neglected children, for the presence of half our convicts in our prisons, and of at least an equal number in our workhouses and jails. One-third of all the recognized pauperism and poverty in civilized nations results from bodily and mental inefficiency due to indulgence in alcoholics.

We are not here to advocate a crusade against alcoholic beverages — we are not here as prohibitionists. We are here as sanitarians to carefully consider facts presented.

It would seem that the use of alcohol produces inefficiency of brain and muscle; breeds insanity and causes poverty and pauperism. These further translated mean immorality, filth, disease and death. In this social, economic and political problem the threads of our science are heavily interwoven. It is for us as sanitarians to recognize the duties and responsibilities of further service to our fellow men.

Experimental Research

One of the greatest fields offered by science to anxious workers is that of experimental research. It has drawn the serious and enlisted the talented energies of hundreds of skilled observers. Are we as sanitarians interested in their work? Let us investigate a little. Since 1893 experimental research work (laboratory work) has—

1. Discovered antiseptic surgery and so made possible the wonderful results of modern surgery.
2. Made possible practically all modern abdominal surgery.
3. Made possible all modern surgery on the brain.
4. Shown how lockjaw spreads from the wound; how sometimes it can be arrested and cured; and still better how it can be prevented.
5. Reduced the death rate in compound fractures from 65 per cent. to less than 1 per cent.
6. Reduced the mortality of ovariectomy from two out of every three, to two or three out of 100.
7. Abolished yellow fever.
8. Made possible cure of hydrophobia.
9. Reduced mortality of diphtheria from 158 deaths per 100,000 in 1894, to 38 per 100,000 in 1905.
10. Reduced mortality of cerebro-spinal meningitis from 80 to 90 per cent. to 30 per cent. or less.
11. Have made it possible to operate successfully for goitre.
12. Reduced mortality of tuberculosis from 30 to 50 per cent.
13. Benefited animals by discovering causes and dangers of tuberculosis, Texas fever, anthrax, glanders, hog cholera and other infectious diseases of animals.

I need not ask you again if we are interested in such work. In our laboratory we prepare the antitoxin for diphtheria for free distribution; the antitoxin for tetanus also free to health officers; a preparation of nitrate of silver for the prevention of ophthalmia neonatorum; and our cancer laboratory located at Buffalo is working vigorously in an endeavor to find the cause and the cure for this deadly disease. Such a problem we attack on the clinical side to see if we can learn anything by such experience; by the microscope to find if the minute study of tissues will reveal the cause;

by the bacteriologists to see if they can discover any germ which may originate the tumor; and finally by animal experimentation to study the life history of such tumors from start to finish. We have not yet found the cause of cancer nor the cure but I know we will.

Opposed to this record what have the foes of research done — the antivivisectionists, as they term themselves, and as they are termed by the silly and sensational newspapers that support them. As Dr. Keene says, they have done nothing but stand in the way of progress. Not a single human life has been saved by their efforts; not a single household made happy; not a single disease has had its ravages abated or abolished.

These four problems so briefly and imperfectly presented may serve to show the diversity and complexity of the questions confronting the sanitarian.

Common Sense in Sanitation

While it is most desirable to have a broad outlook, to survey with a comprehensive glance, if possible, the entire field, it is perhaps of still greater importance to determine wisely exactly what part of the field to occupy.

At present we have so much money and so much energy. Let us use this money and this energy in that part of the field where we feel certain we may produce definite and lasting results. For example, we know how the contagion of certain diseases is spread and we know how to prevent it. Let us take the things we know positively and definitely about, and do what we know will save many lives. We have many associations and charitably-minded and well-meaning people that are stirring up sentiment and increasing the amount of energy and money that can be devoted to public health. It is time that the sanitarians of this country saw to it that that energy and money is wisely used. It is essential that our resources should be devoted to the basic and vital things and not squandered on things which are only theoretical and possible and of minor importance. Sanitary reform is not a matter which can be safely left with medical men as such simply, unless they are trained sanitarians, and it certainly cannot be left to those who are entirely laymen as far as sanitary science goes. Let

us take up the things we can do now and afterward the work that will be waiting.

The highest measure of success in philanthropic work will be reached when the attempt to work in practical isolation and without the co-operation of governmental agencies is abandoned. Whenever success has been attained, the secret has been, not in the discovery of the truth, not in the teaching of it by higher or professional institutions of learning, but in the administrative use of truth, working through governmental machinery. Necessary human uplift work will never be done if philanthropy keeps on trying to take the place of efficient government.

It has been impossible in one brief discussion of public health administration to do more than merely touch upon some of the more salient points. But, if I have been so fortunate as to enlist your interest, in this great object of sanitary science; if it has been granted to me to open the door so that you may have been able to see some way in this great field of endeavor; if I have been able, however inadequately, to show you some of the great honor and nobility of this service, this public service in which we are engaged, I shall be more than satisfied.

THE CHAIRMAN — When Dr. Porter read that list of astonishing triumphs which research is having in its combat with diseases which afflict the public to a greater or less extent, I am sure we all felt we had a profound interest in the fight being made against disease, and for the public health. This side of the subject will be treated by the next speaker of the evening, Dr. Rush Rhees, president of the University of Rochester, who will now address us on the subject, "The People's Interest in Public Health."

DR. RUSH RHEES — Mr. Chairman, Ladies and Gentlemen — The chairman of the evening has very correctly intimated that I might fulfill the task assigned to me by saying that Dr. Porter had made perfectly clear the reasons why the public is interested in the public health. But you will permit me to say that I understand the topic assigned to me is "The Interest of the Public in the Department of Health," in its fight against disease.

THE PEOPLE'S INTEREST IN PUBLIC HEALTH

BY RUSH RHEES, LL.D.,

President University of Rochester

It is a matter of great interest that in one of the greatest schools of the country they have established a chair of "preventive medicine." If this makes us think we have been going to school in China, where we understand the custom or habit is to pay a physician, and give him a good salary for keeping you well, and then dock his salary for every day the patient is sick, still it may be that in the passage of years, we will find ourselves more indebted to that particular Oriental people than we think it is possible to do at this time.

You stand as living evidence of the fact that the community recognizes its right to health. The normal condition is health, and where disease is prevalent, there is some ill that should be ascertained and banished. And before proceeding to the reasons why the public is interested in the work which you represent, I desire to give myself the satisfaction in expressing the interest which the public is having in the work being done by the health officers of the State.

I had only yesterday a letter from one of the most eminent statisticians, speaking very warmly of our own State Department of Health. Is it not that the improvement in the last seven or eight years in that department in the gathering and publishing of statistics is something enormous; and these records are now such that the citizens of the State may be reasonably very proud of them.

Standing here as a citizen of Rochester, in a sense having a right to be one of your hosts, as you come to this gathering, I desire to add a word of appreciation for the health bureau of the city of Rochester.

We have a health administration that we believe adds very largely to the value of our city as a place to live in, and to the advantage of our city as a place to work in; and everything done by that bureau for the protection of the people and the prevention of disease and securing to the people the innate right to

health is something that makes us citizens proud; and as a citizen having such pride I have no apology to offer if I exhibit something of that satisfaction. It is not a satisfaction that believes there is nothing yet to accomplish. Least of all is that view entertained by the very efficient health officer who presides over our health bureau in this city.

I think the public's interest is first, that which a merchant has in the cost sheet of his business. One of the essential features of the health office is the publication of statistics. You advise us concerning our death rate in the community; you tell us concerning the birth rate and the frequency of disease, and the localities where diseases are found. You point out conditions in the life about us favorable to or conducive to diseases; you call our attention to the fact that our industry is filling the air with smoke, and that the marvelous use of the automobile is filling the air with dust, and odors, and that since the prevailing use of the automobile, certain diseases are more frequently found. And you tell us that absence of light and air in the home of the poor, and that there are other conditions favorable to the breeding of disease there. You call our attention to the fact that certain conditions make impoverished health almost inevitable. You set these facts before us without any special appeal, and in the form of tables. Figures are probably the most difficult things to understand; and rightly to judge, that can be given to a body of citizens; and sometimes we are tempted as we take up the health report of the Health Department of the State or of the community, we are likely to say "What do we care how many people died from these diseases?" But when you make a comparison and say the death rate in Rochester was so many per thousand last year, and it is so many per thousand this year, and we can see our condition is improved, we then pat ourselves on the back. But if you tell us there is an increase of so many deaths over last year, we may pause for a moment and say, "Why is this? What can we do with this?"

But you gentlemen are always confronting us with this cost sheet with our municipal and State life, and there is nothing that so deeply concerns the conduct of our life as human strength and life.

The second reason is because, when we learn of unfavorable conditions for life and work, we are solicitous for the improvement of those conditions, and to you we look, because through all the years which have gone you have been our leaders in securing improved health conditions.

I need only mention for the benefit of the citizens here with you, I need only mention four or five of the directions in which these efforts for the improvement of our conditions have been undertaken and fostered by your people. For instance, the improvement of the water supply. The change from the time when in a town like Rochester every man drank water from his own well, or his neighbor's well, until we get to-day water brought here to us, and surrounded with the utmost care in seeing that it is wholesome. That one thing, that is simply an immeasurable advantage. You have given us the luxury of one of the most permanent, fundamental needs of human life. You have given us the advantage of the advertising sort which comes from the fact that a city here or there has a water supply that is wholesome, and adequately protected.

By the same argument we may turn to sewage, but I would not speak on that as you have a master to speak on that subject to you later in the evening.

There is the possibility of very serious danger to the community in this matter; and in the economic distribution and disposal of this waste the opportunity for conserving the financial interests of the community is very considerable. The public is interested in the work which you represent because such things as these are your solicitude and your care. But, more particularly, we look to you for the care and control of infectious disease. Of old, men were disturbed when a pest of smallpox appeared in the midst of a community, and it swept a community as if a scythe of death had swept over it. We have since learned of other pests, foes stealing about ready to attack the people. You have made us to understand that typhoid fever is not a mysterious visitation of Providence, but a negligence or carelessness of the fundamental rules of health. And by controlling the sources of disease you are making our lives more tolerable, more interesting and more full of power and satisfaction.

The last of the great crusades and the greatest of the great crusades, the undertaking of which is of supreme interest to the public, is the crusade, evidence of which is in the room to my left to-night, against the great white plague. Only in the memory of all who are here to-night, have we recognized that that great scourge is, like other pest, stealing and touching one now and then another, but one which can be terminated if the people would heed the counsels and the suggestions which gentlemen like yourselves are constantly giving to us, because your enterprise goes right to the source of the disease, to check and control the ills which threaten us; and because you make our conditions of life wholesome, you interest us.

Only in recent years have we come to appreciate how many kinds of disease are brought to our homes and to our children by milk. And when men like yourselves undertake to clean up this source of supply, and when you demonstrate that the disease-bearing characteristics of milk are identical with the statement that the milk is dirty, you have put us infinitely under your care and obligation. And every effort you put forth to give us that cleanliness and wholesomeness which we have, must be appreciated.

Other efforts for securing pure food apply to this same category which I have spoken of. One other preventive offered is the securing of sanitary tenement-houses. I speak of the tenement-house because the tenant there is less able, either by power or information, to guard against the dangers which lurk there, than a man living in a more adequate place. But in the darkness and dirt and the closeness which ordinarily characterize some of the tenement-house life, you are but characterizing the breeding beds for disease which are to be found. Therefore, when you come before us and say "We must have a law which will protect the community from such breeding places of disease," we respond with appreciation and say that the work which brings the knowledge of these conditions, and sets forth the method for escaping them, is work which should have our approval and support.

The same may be said as to sanitary inspectors in our factories.

Now I would like to digress for a moment for a comment upon

this state of the matter: all these efforts for securing conditions favorable to good health mean "Further inroads upon private liberty." There is always someone who rises and raises a cry of "personal liberty," and states that this interferes with his private affairs. If the health officers of any town undertake to secure proper and wholesome conditions of living, whether of food supply or what-not, there is always raised from some quarter the great cry of "liberty" and "infracton of the liberty of the citizen." That is a mighty word, and it makes a strong appeal to some. There are some whose homes have not been visited by such plagues as occur in others, and they say, "Why should any law come in and tell me to clean my factory, or my barn, or to tear down a tenement?" If we like to live in a community, and the phenomenon is that we prefer community life to perfect freedom, it is impossible to live in a community without the surrender of some of this freedom; and the question presented in community life is this: to what extent is the perfect liberty of individual action to be curtailed in order that the perfect freedom of the community life may be obtained?"

The community lays its hand on the individual of the community at any point, and at any time, and it says: You must not or you must do this or that. His liberty to that extent is gone.

When they come with a demand that certain private interests should be surrendered to the public good, only so can we get it where many multitudes of people gather because they find greater satisfaction in the life developed in great cities, than in isolation.

There is one other reason — two other reasons — which I will very briefly give to you for the interest of the public in the work which you represent.

The first is the interest of public economy. Two aspects of economy I would call to your attention. The first is that which comes from the prevention of crime, for it is clear to us that the prevalence of disease, and the development of ill-fed, ill-nourished (in any direction) life has a tendency to increase in insanity and crime. It is overwhelmingly established that the connection is not only intimate but causal. That being true, let us consider what we are paying for prisons, hospitals, asylums and the care

of paupers, those whose efficiency of life has been taken away. What is the total of that expenditure? Is it possible, by preventive effort, to prevent these charges of the State? Our balance sheet will show an advantage if we can reduce the population of these institutions. Then, we should be under great obligation to guides who will show how that can be secured.

Then there is another aspect of the economy. We have congratulated ourselves as a people during the last two or three centuries of the peculiar aptitude of the Yankee — his readiness to take hold of any task and to do it effectively. When we consider why this is, we are forced to see it is because the people who came to make this nation have by that fact been typical of universal energy, and they were forced to put their utmost energy. Inheritance and environment have combined to develop in them the strongest powers found in human life, and these have been found among our people from the beginning. When they leave the task of subduing the wilderness, and turn to other tasks, they have been found equally efficient. But what is to happen when the immigration that comes to us is not the most learned or the most venturesome or forceful of the people of the earth? But instead of that class, it is composed largely of those who are pushed out by the nations, not always famous for the energy and vigor which they have contributed toward civilization. What is to happen when this element becomes significant in our population, and we are no longer a picked people whose life has been developed in a peculiar field? Can we expect the same qualities to be still further developed? Not unless by due care and adoption of the counsel which you men give to us, we see to it that the conditions of life are made as favorable as possible to the development of good minds in sound bodies; and, unless we adopt the measures which you have given to us, can we expect this efficiency to be maintained at that standard?

We are no longer a people who can be satisfied with our home markets. Unless we can retain the efficiency of the man behind the machine, we will not maintain our place in the world's commerce and industry.

Economy of human life and efficiency, and of that element which in the last analysis will determine supremacy, is the con-

dition which dictates to us the supreme condition the public has in the work which you gentlemen have undertaken and are guiding.

My last word is that the interest in common philanthropy dictates to us profound regard for the things in which you are guiding. If we believe a man is born for living and not for death, for health and not for sickness, and that it is the right of every human being to have an opportunity to grow and fulfill its purpose of existence, all those reasons which appeal in other fields cry out to us to lend a hand to those efforts which shall not cure disease after it is contracted, but prevent the contraction of disease, and thus make the community wholesome and strong because free from evil estate.

SHALL WE CONTINUE OR SHALL WE STOP THE
SEWAGE POLLUTION OF STREAMS?

BY WILLIAM T. SEDGWICK, Sc.D.

Massachusetts Institute of Technology

It was formerly believed that "running water purifies itself." And so to some extent it probably does. But it is now agreed by all competent sanitarians that to depend upon the self purification of streams for any adequate purification of sewage is to lean upon a broken reed. The long series of epidemics of typhoid fever and other diarrheal diseases conclusively traced to drinking water drawn from rivers polluted with sewage at various distances upstream, has settled this point beyond all peradventure. It is really quiet water rather than running water that oftenest purifies itself, because — for one thing — in quiet water sedimentation or settling takes place favoring the deposit of mud and microbes, and giving disease germs time to die out instead of carrying them quickly and while still virulent to some other place and perhaps some other people. We ought, then, to stop the sewage pollution of streams; because we never know how far down these may carry the germs of deadly diseases, or who may be using the streams below for drinking or other domestic purposes. We know only too well that typhoid fever and other diarrheal diseases are disgracefully common in the United States, and we know also that one of the principal reasons why this is so, is because we so often pollute even our best lakes and rivers with sewage.

But what can we do with our sewage if we do not merely let it run into the nearest stream? The answer is, we must either turn it upon land, for farming purposes as is done with great advantage in some states where irrigation is a frequent necessity; or else we must somehow scientifically *purify* it, removing from it before letting it go into lake or stream so much of its noxious material as is likely to create a nuisance or otherwise endanger the public health. To do this, while not very easy, is now entirely possible, and in every civilized country progress is being made in this direction, although such progress has sometimes been slow.

In England, for example, which was the first country to squarely face and master the problem of the sewage pollution of streams, many years were occupied in investigation and experiment before decisive steps were taken. Massachusetts, profiting by the experience of England attacked this problem about 1880, and met it squarely and vigorously in 1886. Following the example of Massachusetts, the State of Ohio has more recently dealt bodily with the same difficulties; and now the question comes squarely before the great State of New York whether it shall or shall not have the courage to stop the sewage pollution of its streams.

As an aid to the solution of the problem the experiences of Massachusetts may be instructive. In Massachusetts the foundations for the present excellent practice were laid and definite progress was begun by the enactment of Chapter 274 of the Acts of 1886. Under this statute the State Board of Health was given "the general oversight and care of all inland waters" and instructed (among other things) to "recommend measures for prevention of the pollution of such waters" in order "to protect and develop the rights and property of the commonwealth therein and to protect the public health * * *".

"It shall from time to time consult with and advise the authorities of cities and towns, or with corporations, firms or individuals either already having or intending to introduce systems of water supply or sewerage, as to the most appropriate source of supply, the best practicable method of assuring the purity thereof or of disposing of their sewage, having regard to the present and prospective needs and interests of other cities, towns, corporations, firms or individuals which may be affected thereby. It shall also from time to time consult with and advise persons or corporations engaged or intending to engage in any manufacturing or other business, drainage or refuse from which may tend to cause the pollution of any inland water, as to the best practicable method of preventing such pollution by the interception, disposal or purification of such drainage or refuse: *provided*, that no person shall be compelled to bear the expense of such consultation or advice, or of experiments made for the purposes of this act. All such authorities, corporations, firms and individuals are hereby required to give notice to said board of their intentions in the premises, and to submit for its advice outlines of their proposed plans or schemes in relation to water supply and disposal of drainage or refuse. Said board shall bring to the notice of the attorney-general all instances which may come to its knowledge of omission to comply with existing laws respecting

the pollution of water supplies and inland waters and shall annually report to the legislature any specific cases not covered by the provisions of existing laws, which in its opinion call for further legislation."

Time and experience have shown that this act, which still stands upon the statute books with only minor alterations, has been fundamental and fruitful in the control of the pollution of streams and other inland waters by the sewage of cities, towns, villages, and the like.

The authority given under this statute to the State Board of Health to make rules and regulations for the protection of water supplies was first made effective in 1897 and by the revision of the laws is now included in the general statute. The making of such rules and regulations rests of course with the State Board of Health. As a good example the rules made by them for the protection of the water supply of the city of Cambridge are specially worthy of attention.

Since about the year 1888 the laws giving cities and towns authority to construct systems of sewerage have generally contained a clause — providing for the construction of the works in accordance with plans approved by the State Board of Health, and in 1909 an additional act of great importance was passed by the Legislature (Chapter 433) providing for the proper maintenance and enlargement of works for the treatment or purification of sewage — an act greatly needed and very beneficent in its working.

[Chapter 433]

AN ACT to provide for the proper maintenance and enlargement of works for the treatment or purification of sewage.

Be it enacted, etc., as follows:

Section 1. Cities, towns, persons, firms or corporations, owning or operating filter beds or other works for the treatment or purification of sewage shall provide and maintain works adequate for the treatment of the sewage at all times, and shall operate such works in such manner as will prevent a nuisance therefrom or the discharge or escape of unpurified or imperfectly purified sewage or effluent into any stream, pond or other water, or other objectionable result.

§ 2. The board of sewer commissioners or other board or officer

having charge of the sewers in cities and towns shall have authority to make such regulations regarding the use of the sewers as are necessary to prevent the entrance or discharge therein of any substance which may tend to interfere with the flow of sewage or the proper operation of the sewerage system or disposal works.

§ 3. The state board of health, if convinced, upon examination, that a filter bed or other works for the treatment or purification of sewage causes the pollution of a stream, pond or other water, or is likely to become a source of nuisance or create objectionable results in its neighborhood by reason of defective construction, inadequate capacity or negligence or inefficiency in maintenance or operation or from other cause, may issue notice in writing to the city, town or person owning or operating such works requiring such enlargement or improvement in the works or change in the method of operation thereof as may be necessary for the proper maintenance and operation of the works and the efficient purification and disposal of the sewage. In case the state board of health is satisfied after investigation that the unsatisfactory operation of a sewage disposal system is due wholly or partly to the discharge into the system of manufacturing waste or other substance of such character as to interfere with the efficient operation of said works, said board may if necessary prohibit the entrance of such waste or other material or may regulate the entrance thereof into the system, or may require the treatment of such waste or other material in such manner as may be necessary to prevent its interference with the operation of the works.

§ 4. The supreme judicial court, or the superior court, shall have jurisdiction in equity to enforce the provisions of this act upon petition of the state board of health or of any party interested.

§ 5. This act shall take effect upon its passage.

Approved May 21, 1909.

[CHAP. 290, ACTS OF 1909.]

AN ACT to authorize the town of Mansfield to construct and maintain a system of sewerage and sewage disposal.

Be it enacted, etc., as follows:

Section 1. The town of Mansfield is hereby authorized to lay out, construct, maintain and operate a system or systems of main drains and common sewers for a part or the whole of its territory, with such connections and other works as may be required for a system of sewage disposal; and, for the purpose of providing better surface or other drainage, guarding against pollution of waters, and otherwise protecting the public health, may lay, make and maintain such main drains as it deems best. For the purposes aforesaid the town

may within its limits, deepen, widen and clear of obstruction any brook, stream or water course, and may straighten or alter the channels or divert the waters thereof, and may lay, make and maintain sub-drains, and, with the approval of the state board of health, discharge the water into any brook, stream or water course within the town. * * *

§ 15. No act shall be done under authority of the preceding sections until the plans for said system of sewerage have been approved by the state board of health. Upon application to said board for such approval the board shall give a hearing, after due notice to the public. At such hearing plans, showing in detail all the work to be done in constructing said system of sewerage, shall be submitted for the approval of the state board of health.

In certain cases also special laws have been passed to prevent the pollution of particular rivers, such for example as the Neponset and the Charles.

Twenty years ago the people in general were comparatively ignorant of the dangers attending the pollution by sewage of lakes, estuaries and streams, and the corresponding state of public opinion made it necessary to educate and advise, rather than compel, communities to beware of the pollution of the waters in their vicinity. And, fortunately for most well-informed American communities, advice publicly given is almost as effective as compulsion, because of the local pride of the people and their sensitiveness to possible criticism under the pressure of public opinion.

We are apt to forget how recent are the teachings of sanitary science. It has been truly said that "the 19th century discovered dirt," and the 20th century is not yet ten years old. We think of the 19th century chiefly as a time of industrial progress, and are too apt to forget that perhaps the most important lesson of that famous century was the discovery that man must look not to the heavens but to the things about him and within him for the sources of his diseases and death.

The modern sanitarian looks upon dirt not merely or even chiefly as distasteful or disgusting. He regards it rather as the ready vehicle of the active agents of disease. The public thinks of dirt as chiefly disgusting and as mostly dry or solid; but the sanitarian knows that the most dangerous dirt is often watery and fluid — as in sewage. Nor is dirt always dirty looking. Some of the worst and deadliest dirt may move absolutely unseen and un-

suspected in waters that look innocent and even sparkling. Little streams of sewage may thus meet and mingle with pure waters, losing themselves completely in the limpid stream, yet loading it with filth and foulness, and charging it with germs of death.

We hear much nowadays of pure food supplies, pure water supplies and pure air supplies; but the removal of the wastes and refuse from our cities, towns, villages, and farmhouses is no less important. For it is with the social organism,—the municipality, the village, the family,—very much as it is with the human organism: to retain putrefying wastes within its borders is an evil similar to that which arises in the human body from undue retention of urine or bowel contents. Poisoning ensues in the one case almost as certainly as in the other.

But again comes the question, what shall we do with the wastes of our cities? Shall we simply throw them, as our ancestors did, in the sixteenth and seventeenth centuries, out of the windows, out of the doors, and out of the houses, into the public streets, filling these with rubbish and wastes, and making it risky for passersby lest slops shall fall upon them from chamber windows? We have certainly got further than this. We remove our wastes from human habitations, employing some form of sewage disposal, refuse disposal and garbage disposal. We get rid somehow of ashes, paper, garbage and sewage. And for the sewage, often the most abundant and always the most dangerous portion of the wastes of habitations, we provide either cesspits, cesspools or sewers. When a small community introduces sewers, it most often turns to the nearest stream as its natural means of sewage disposal, for is not the stream already dirty, carrying, especially in the spring time, mud or rubbish of various sorts, and not infrequently dead cats or dogs? Is not the stream the natural and logical place for disposing of sewage, which after all is only a particularly dangerous form of dirty water? So, at any rate, communities are apt to reason; and as long as the nature of dirt was not understood, and until we had learned that dirt, disease and danger all belong in the same category, there was every excuse for this sort of sewage disposal.

But we have learned our lesson. In the hard school of experience we have learned that hundreds of epidemics of typhoid

fever and Asiatic cholera have come from the use of drinking water tainted with sewage, barely tainted it may be with little stealthy streams of water bearing human excrement. This it is which has given rise to the great problem of sewerage and sewage disposal. And this it is which has caused numerous commissions, especially in western Europe and America to study elaborately the pollution and purification of rivers. This it is which makes urgent the question, Shall the great Empire State of New York continue, or shall it stop, the sewage pollution of streams?

One of the worst plague spots, if not the very worst, in respect to typhoid fever, in the United States to-day is Niagara Falls, in which the death rate from that well-known and preventable disease averaged for the ten years, '97-'07, 134.1 per hundred thousand, the highest during that period having been 181.6, and the lowest 107.9 per hundred thousand. And a careful investigation by Professor Ogden of Cornell University has shown beyond question that this enormous death rate is due almost wholly to the pollution of the public water supply by the sewage of the city of Buffalo.

For the citizens of Niagara Falls this condition is bad enough, but if the consequences were limited to the people of Niagara Falls, the rest of the country might look on with comparative composure. In point of fact, the sewage pollution of the water supply of Niagara Falls is a matter not merely of local, but of national concern, for Niagara Falls is visited annually by hundreds of thousands of people from all over the country, many of whom, after drinking the sewage-polluted public water supply, carry away with them the seeds of typhoid fever with which they afterward sicken, and some of them have died in remote parts of the country or even beyond the country. Furthermore, because every case of typhoid fever wherever it occurs is liable to become a focus of fresh infection, it is impossible to set any limit to the amount of sickness and death produced all over our country and even beyond its borders by the pollution of the water supply of Niagara Falls by the sewage of the city of Buffalo. For these reasons I consider the state of affairs which has long existed at Niagara Falls disgraceful both to the State of New York and to the United States of America. I am accordingly glad to be informed that

active measures are under way for the introduction of an improved water supply into this fever stricken community.

The change in public opinion of late years under the constant sanitary education of the people is not only extraordinary but encouraging, and the time is at hand — if it has not already arrived — when the stain of sewage now almost everywhere borne by our lakes and rivers, must be forever erased. And for this erasure we must look first to the people — and especially to the leaders and representatives of the people, our lawmakers — and next to their official agents, chief among whom are our State Departments of Health. These latter, in turn, armed with the authority of the law and equipped with the appliances of modern science deserve and require the patriotic support of the people.

The recent protest of a distinguished citizen of the State of New York against the conversion of the Hudson river into a sewer is well worth remembering in this connection. The writer, Mr. John Bigelow, through the shades of Hudson and Fulton, cries out — “The river you are making such an ado about discovering and navigating is not the river either of us ever saw. The river we know and which bears one of our names consisted of as pure and delicious water as ever descended from heaven. You have permitted it to be converted into a great sewer into which all the cesspools, barnyards, kitchens, mills and factories between New York and Troy discharge all their polluting exuviae and rubbish, instead of sending them back upon the lands whence they came and which they should enrich. In doing this you have deprived all the river counties of one of their most valuable crops. That river in our time used to swarm with shad, herring, sturgeon, striped bass, bullheads, sunfish and pan fish of many other varieties. These fish used in our times and for many years after to furnish at least one-third of the nourishment of all the inhabitants for ten miles back on both sides of the river from New York to Albany. * * * If you wish to honor us for what we have done, to render this magnificent waterway useful, restore it to the condition in which we left it, and when it was ready to appease the hunger and thirst of millions of people.”

THURSDAY, NOVEMBER 11, 1909

THIRD SESSION, 10 A.M.

Presiding: ALEC H. SEYMOUR.

THE CHAIRMAN — *Gentlemen of the Convention:* It is my very great pleasure this morning to introduce to you a man known all over the confines of the State of New York, as well as over the United States, not only for his great work in the field of education, but his interest in sanitary matters. I am sure you will be pleased to learn what is to be done at Cornell University in instruction for sanitarians.

I take great pleasure, therefore, in introducing to you Jacob Gould Schurman, President of Cornell University.

MR. JACOB GOULD SCHURMAN — *Mr. Chairman and Gentlemen:* I very seldom read a paper, but I must catch a train leaving here in forty minutes, and when you write what you have to say, it has some advantages. You are able to think out your subject with more care, and you are compelled also to condense what you have to say. A man speaking freely, without manuscript, can wander at random as he will. He is not obliged to follow any order, and he is not under obligations to be brief, but as the train cannot wait for me, I have put down in a most condensed form what I have to say.

A SCHOOL FOR SANITARIANS

By JACOB GOULD SCHURMAN, LL.D.

President of Cornell University

I do not propose to take up any of the time of this Conference in presenting facts which are either well known or easily accessible. That human life has lengthened during the latter half of the nineteenth century, about seventeen years, that its length can still be greatly increased, that of the 3,000,000 persons in the United States who are always seriously ill fully half are suffering from illness that is preventable, and that according to the great authority, Pasteur, it is within the power of man to rid himself of every parasitic disease, are matters so well known that they need not be repeated here. Anyone who wants to acquaint himself with the salient facts on the whole subject of national vitality, its present wastes, and the best methods of its conservation, may be referred to the bulletin of Professor Irving Fisher, issued by the Committee of One Hundred on National Health.

The amount of public money now spent in New York State and in the United States in the safeguarding of the public health

is enormous, though it is not possible to determine it with absolute accuracy. The standard source of information is the special report of the Census Bureau on "Wealth, Debt and Taxation." The well-known statistical expert, Professor Willcox of Cornell University, has supplied me with information prepared by himself after conference and correspondence with the compiler of the census volume referred to. Here is an itemized summary of the expenditure for 1902:

Expenditures in 1902 for:	New York State.	United States.
Health conservation.....	\$1,534,633 00	\$9,460,520 00
Sewers, drainage and other sanitation.....	6,911,047 00	26,417,947 00
Care of insane.....	4,913,615 00	23,021,207 00
Hospital subsidies from pub- lic funds	\$712,129 00	\$2,276,336 00
Operating expenses of water- works (estimated).	4,400,000 00	21,400,000 00
	<hr/> \$18,471,424 00	<hr/> \$82,576,010 00
	<hr/>	<hr/>

In this estimate no mention is made of the cost of charities other than hospitals, or parks and playgrounds, and of many other forms of outlay having a recognized relation to public health.

But the items included amount to nearly eighteen and a half million dollars for New York State and more than eighty-two and a half millions for the United States. The significance of these figures of New York State may perhaps be better judged when we notice that the amount of the taxpayers' money thus expended amounts to more than 45 per cent. of the total cost of public education in this State, more than double the cost of all our courts of law and law officers, double the cost of all the fire departments of the State and more than treble the cost of all our street lighting. Furthermore, there is no branch of public expenditure in which the outlay is increasing so rapidly as in this. It is not unlikely that if similar figures for the year 1909 were available, it would appear that New York State is now spending annually \$30,000,000

from money raised by taxation in these various lines of public health work.

The items mentioned in the preceding table show that the work of the sanitarian is quite distinct from that of the physician. Both, indeed, have to do with life, yet they approach the subject from entirely different points of view. Life has been defined by Herbert Spencer as "an adjustment of organism to environment." The object of the physician's interest is the organism. The object of the sanitarian's interest is the environment. Furthermore, the physician cures diseases after they have occurred. The aim of the sanitarian is to prevent disease. Instead of providing for sanitary science dealing with the environment in which we live, a modern medical course cannot provide for instruction in even personal hygiene. There is no space in the curriculum for the subject of sanitary hygiene. And then, the students of medical schools are not interested. They are only interested in the application of their discoveries to human diseases. Medicine is concerned with chemistry, with physiology, with anatomy. What do the medical men know of the chemistry of foods, of vital statistics, of sanitary engineering? And yet, these are the great and important subjects included under sanitary science. The public might as well awake to the fact that schools of medicine do not consider it as a part of their duty to train men even in personal hygiene much less in sanitary science.

The American people are suffering from the lack of trained sanitarians. Let me read you a statement written three or four years ago by the editor of *Engineering News*, a member of the Board of Health of Montclair, N. J.:

"One of the greatest difficulties which any local board of health has to contend with in trying to put the municipality under its care in proper condition to-day, is the finding of the proper sort of men to carry on the work of inspection and protection of the public health. There is not in the United States to-day any means of providing the training which is necessary for an executive health officer or health inspector, and we are continually confronted in Montclair with this fact."

Two years ago the Commissioner of Health of this State received a copy of a resolution passed by the Medical Society of the State

of New York, at its annual meeting. The import of this resolution was that it was the opinion of the society that only those physicians should be appointed as health officers who could show evidence of special training in public health work, and the inference of the resolution was plainly a request to the Commissioner that his future appointments should be made on this basis. Unfortunately, as the Commissioner pointed out there was then no institution in this State (nor in any other State for that matter) offering courses giving special training for public health work.

It is impossible for the medical schools to provide the necessary training. The medical curriculum is already overcrowded, and the subjects which form the backbone of a course of training for sanitarians, namely, vital statistics, chemistry and biology, and sanitary engineering, are themselves sufficient to fill up a professional curriculum. As Professor Sedgwick has well said:

“ It is to-day absurd for the average well-trained medical student to think of becoming an expert in such branches of hygiene as water-supply, sewerage, garbage collection and disposal, gas and other forms of light supply, ice supply, milk supply, the abatement of nuisances, etc. These belong rather to the sanitary engineer, sanitary chemist, and sanitary biologist; to sanitation rather than hygiene.”

What we need is trained sanitarians supported by an awakened and intelligent public opinion. A new profession is rising in this country, and the public interest demands its speedy development. I allude to the profession of the public health officer, a profession already recognized in England by a special diploma. The health officer should wherever practicable devote himself wholly to the duties of his office and be absolutely prohibited from practising medicine. In this respect he should be like the lawyer, who on election as judge ceases to practise law. As Professor Fisher has well said, “ No court, police or fire department or any agency of government can be more important to the people than this under the complex condition incident to the rapid growth of both rural and urban populations,” yet I recognize that such officials will not be appointed, or if appointed, adequately supported until public opinion is educated in matters of hygiene and sanitary science.

Therefore, the education of the public is quite as important as the training of scientific sanitarians.

A scientific school in any field whatever ordinarily has three functions to perform. The first is to engage in research in that branch of science to which it is dedicated. The second is to educate in that field the students who matriculate in the school. The third is to promote among the general public such results of scientific investigation as may be susceptible of practical application for the health, prosperity, intellectual or moral improvement of the people. A school of sanitary science should discharge all these functions. It should be a seat of research in sanitary science, a school of professional training for future sanitarians, and an organ for the extension of sanitary knowledge among the people.

Of these three functions of the sanitary school the training of sanitarians and the promotion of sanitary knowledge among the people are the most important functions. Already far more knowledge has been accumulated in this field than is being utilized for either of these functions. I would not, indeed, debar a school of sanitary science from engaging in research. On the contrary, it is my conviction that no scientific school in any field whatever can flourish without research. Men who are not enlarging the boundaries of a science lose their interest and enthusiasm in it and become disqualified either for teaching students or instructing the public. And this is just as true of sanitary science as of any other science. The point of my remark is that at the present time the functions on which emphasis should be laid are the education of young men and women for sanitary officers, and the carrying of elementary instruction in sanitary science to the people at large. Research would doubtless be recognized and I would not exclude it even at the outset, but I would say to the Faculty that the existing circumstances demanded the immediate utilization of existing knowledge rather than the enlargement of knowledge.

I believe that young men and women are simply waiting for an opportunity to enter this new profession. It appeals to their scientific interest because it aims at prevention not merely cure, and it appeals to their moral interest because of its altruism, of the service which it renders to the community. Just now medicine as a science and art of curing disease is failing to attract

a due proportion of students. The attendance in our best medical schools, in most of the medical schools in the country indeed, has considerably fallen off, and I believe that we shall see a change even in the function of the physician. In the field of personal hygiene he will be called on to prevent disease and not merely to cure it. A similar change has already taken place in the profession of law. A generation ago lawyers collected damages for us after we got in trouble. To-day the chief business of lawyers is to guide men in the conduct of their affairs so that they shall escape trouble. A generation ago the practice of lawyers was consequently in the courts. To-day the best lawyers all do their work in their offices. And in medicine as in law, the magic word is coming to be prevention and it is because the sanitarian prevents suffering from disease not only to scattered individuals, but to whole communities, that his calling is in harmony with the best professional spirit of the time and challenges the interest and enthusiasm, and the mind and heart of the rising generation.

The State Commissioner of Health, Dr. Porter, caused last winter to be introduced in the Legislature a bill providing for the establishment at Cornell University of a State School or College of Sanitary Science which would rank with the College of Veterinary Medicine and the College of Agriculture which the State has already established there. A large number of the subjects prescribed in the curriculum of such a school of Sanitary Science are already taught in the different departments and colleges of Cornell University. The number of new subjects to be introduced would not be large. Consequently, the cost of maintaining the school would be small. Furthermore, it happened that though Cornell University is in general crowded, the Medical Department, owing to the recent requirement of a college degree for admission, has room to spare in its building. I believe that in the interest of the public health the people of New York State should support the Commissioner in getting the bill enacted into law this year. I know no other way in which by so small an expenditure of money so much might be accomplished for the health of the State of New York. If the Commissioner secures the establishment of his School of Sanitary Science, I pledge him the cordial co-operation of Cornell University in making its work

effective. The two functions which in my judgment it should immediately undertake are, first, the training of young men and young women for the new profession of sanitarians, and, secondly, extension work in all the municipalities and health districts of the State with a view to educating the people in the most important scientific conclusions reached in this field and the best practical arrangements to be made by the health boards and health officers for protecting, conserving and lengthening the life of our people.

DR. JOHN W. LE SEUR — Mr. Chairman, I move you that the privileges of the floor be extended to all visiting physicians and professional gentlemen.

THE CHAIRMAN: You have heard the motion. All in favor will please say Aye, all opposed, No. It seems to be unanimously carried. I am about to announce that we have a treat that does not appear on the program. It affords me great pleasure to introduce to this assemblage Dr. Rosalie S. Morton, Chairman of the Public Health Education Committee of the American Medical Association.

DR. ROSALIE S. MORTON — If it were not for the cordiality of your reception, I should feel some embarrassment in coming before you, since the motion made a few moments ago was to allow all professional gentlemen the privileges of the floor. There are a number of professional women present at this time.

REPORT OF THE PUBLIC HEALTH EDUCATION COMMITTEE OF THE AMERICAN MEDICAL ASSOCIATION

BY ROSALIE S. MORTON, M.D., *Chairman*

I have been asked to come before you to present the Report of the Public Health Education Committee of the American Medical Association. I am sorry to say that the acoustics in this hall are not very good, and I am going to ask those sitting under the sides of the gallery, if they will not come to the side seats nearer to the front, as I know from my experience, seated there yesterday, that very little can be heard.

The resolution creating this committee was passed unanimously by the House of Delegates of the American Medical Association at its last meeting in Atlantic City, June, 1909.

A meeting of the women physicians of the American Medical Association was called in New York City, July 20th. Women from all over the United States were present and formulated plans for work in women's clubs, young women's christian associations, mothers' and teachers' associations, social settlement clubs, etc., and work is now going forward in Arizona, Connecticut, Georgia, Indiana, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Washington, Wyoming, Hawaii, and the District of Columbia.

The plan of work is to affiliate through the committee the large amount of public health education now being done individually and by scattered groups of women, to concentrate this work under the American Medical Association, giving unity of purpose and co-operation of effort to all work along these lines for the public good.

This work is directed by a central committee composed of women physicians from different sections of the United States, one from each of the following: Colorado, Texas, California, Illinois, Kentucky, Massachusetts. The secretary, treasurer, and chairman are from New York City. The honorary chairman is Dr. Sarah R. Adamson Dolley, of Rochester, N. Y., the second

woman to graduate as a physician in America, having graduated in 1851. It shows that her good work and that of the women who came after her was needed, and has been cordially received by men physicians, since in less than sixty years, the practice of women in medicine has grown from that of two women to many thousand, working in every State in the Union, with the best men in their State, for the good of humanity.

The work is subdivided under state secretaries, and still further, under county chairmen, whose duty it is to learn what physicians — both men and women — will be willing to deliver lectures on the following subjects:

The cause and prevention of ordinary colds.

The value of pure food in the physiology of digestion.

The chemistry and economic value of food and the care of the food in the home.

The relation of pure water to the public health.

The water-borne diseases.

The value of exercise and rest to the public health.

The causes and prevention of nervous exhaustion and prostration.

The use and abuse of stimulants and narcotics.

The importance of the standardization of drugs.

The prevention and cure of tuberculosis.

The air we breathe and the value of ventilation.

The relation of flies, mosquitoes and other insects to public health.

The care of the sick at home.

Pure milk and infant hygiene.

The hygienic management of nervous children.

The prevention of acquired deformities.

The prevention of Fourth of July injuries and tetanus.

The relation of teeth to good health.

The prevention of diseases transmissible from animals to man.

The importance of the early diagnosis and treatment of adenoids.

The causes and prevention of deafness.

The causes and prevention of blindness.

The causes and result of eye-strain.

The value of vaccination and serum-therapy.

The need of medical inspection in the public schools.

The advisability of a National Board of Health.

How to instruct children concerning the origin of life. (This to be presented before teachers and mothers.)

The care of the health during the menstrual period.

The responsibility of girlhood to motherhood.

Pregnancy and the Menopause.

The value of the early diagnosis of cancer in women.

The value of animal experimentation in surgery, in nutrition, in diabetes, in nervous diseases, in tuberculosis, and in infectious diseases.

The responsibility of boyhood to fatherhood.

The prevalence and prevention of venereal diseases.

Social hygiene. How parents may protect their sons and daughters from immorality.

Women physicians, as members of women's clubs, etc., come in contact with a vast number of women, and we have learned that what Dr. George W. Wagoner, of Johnstown, Pa., said lately in his presidential address to the Medical Society of the State of Pennsylvania, is true; namely, "Doctors are losing the confidence of and receiving criticism from the laity." This is largely due to the fact that throughout the country the public is being exploited by pseudo-scientists who affirm that we, the so-called "drug-doctors," are commercially interested in keeping the people ill, while they are working to prevent disease.

The laity is much interested in public health education, the psychological moment has come, and it would be a serious reflection upon our profession if we did not now combine with the health officers to educate the public to a thorough appreciation of the position of the doctor as the protector of the health of the community, and thereby emphasize the fact that this desire to educate the public for the prevention of disease is general among physicians. I come before you as chairman of this committee to ask your hearty co-operation as individuals, and as members of the New York State Department of Health, in this work of service to our country, for you know so well how to develop every sanitary measure and you so successfully protect the health of

the community that in the beginning of this work we wish to lay our plans before you and request that you will freely make suggestions as to how we may increase our usefulness for we wish to be guided by your greater experience and each of our county chairmen will depend upon your co-operation for the fullest success of her work.

We have received letters expressing hearty interest from chairmen of other committees of the American Medical Association and other representative physicians all over the United States, expressing their satisfaction in the plan of work outlined by this committee and their desire to co-operate in every way for mutual service to humanity. Among these were letters from Col. William G. Gorgas, President of the American Medical Association; Dr. Prince A. Morrow, Chairman of the Executive Committee of the American Medical Association Section on Preventive Medicine and Public Health; Dr. Frank Van Fleet, New York Representative of the American Medical Association Board of Public Instruction on Medical Subjects; Dr. Samuel G. Dixon, Commissioner of Health, Pennsylvania; Dr. William Brumby, Health Officer of Texas; Dr. Gardner T. Swarts, Health Officer of Rhode Island; Dr. Eugene H. Porter, New York State Commissioner of Health; Dr. Albert H. Garvin, of Raybrook, Superintendent of the New York State Hospital for Incipient Tuberculosis; Dr. Thomas Darlington, Commissioner of Health, New York City; Dr. Harvey W. Cushing, of Baltimore; Dr. William J. Mayo, of Rochester, Minn.; Dr. S. McCuen Smith, of Philadelphia; Dr. Clarence Wheaton, Dr. William H. Wilder, Dr. Geo. C. Shambaugh, Dr. Chas. W. Robertson, and Dean Wells, of the University of Chicago; Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry of the U. S. Department of Agriculture; Dr. Reid Hunt and Dr. George M. Kober, of Washington, D. C.; Dr. F. Park Lewis, Chairman of the American Medical Association Committee on Ophthalmia Neonatorum; Dr. William H. Welch, of John Hopkins University; Dr. W. Schier Bryant, Dr. O. H. Rogers, Dr. Simon Flexner, and Dr. Pedersen, of New York; Dr. Crothers, of Connecticut; Dr. J. N. McCormick, Chairman of the American Medical Association, Committee on Organization; Dr. C. A. L. Reed, Chairman of the American Medical

Association Committee on Legislation; Dr. Frederick P. Henry, President of the Philadelphia County Medical Society; Dr. Milton J. Rosenau, formerly of the Public Health Service of the United States, now Professor of Harvard, and Surgeon-General Walter Wyman, of the United States Public Health and Marine Hospital Service.

Dr. M. May Allen of this city is New York State secretary of our committee, and we hope through your co-operation with her and with the various county chairmen, to make New York the leading State in this national movement for lessening human suffering and saving human life.

CHAIRMAN SEYMOUR—I am sure you have all been very much interested in hearing Dr. Morton tell of the work of this committee; and I think I can say for all that she will have the hearty and cordial co-operation of the health officers of the State, and the State Department of Health in every way that we can do so.

The Commissioner desires me to make an announcement that there will be a smoker to-night at the Powers House, and we will there get an opportunity to meet several gentlemen who are on the program for to-morrow.

Surgeon-General Wyman and Dr. Wilbur, from Washington, are in the audience now, and I wish they would come to the platform, as I wish to have their moral support if I can get it, in conducting this meeting.

You will notice by the program that following our usual custom, we inflict one paper on legal topics upon the delegates. I know this is not a particularly interesting subject, but some of the men feel we must have something of the kind, and it is my misfortune to have to present this to you.

THE PUBLIC HEALTH LAW

BY ALEC H. SEYMOUR, ESQ.,

Secretary, State Department of Health

The Public Health Law is of vital interest and importance to every citizen of the State, and especially so to those officers of government called upon to administer or enforce it. In reviewing the addresses presented at our Conferences there will be found a number on legal questions, some of which discuss many practical questions of value.

The difficulty of undertaking to speak fully and clearly on any one phase of our laws is apparent, and I shall not burden you with a paper replete with legal decisions, from which you could glean but little, but will endeavor to point out the development of the law and its great defects in this State, believing that this will be of greater value, as the subject does not appear to have been treated in this way at any of our meetings.

Ruskin once said: "Any interference which tends to reform and protect the health of the masses is viewed by them as unwarranted interference with their vested rights to inevitable disease and death."

That this cynical remark contains an element of truth the experience of those eager to build up legislation as affecting public health would seem to indicate. The law is a subject of giant proportion. It surrounds every profession, and every trade; guides, controls and directs our actions in every phase of life. It safeguards the weak and restrains the powerful. In its support and enforcement, society is safe; without it we become the prey of every enemy of mankind.

But, notwithstanding public prejudice and indifference to legislation designed to improve and protect public health, there have still been marked advances made. Our Legislatures have acquired a marvelous capacity for laws, and we have developed in this country a most astonishing industry in putting new statutes in effect.

In an address recently, the Right Hon. James Bryce, British Ambassador, said:

“The out-put of legislation has of late years been incomparably greater than in any previous age.”

So during this period it is not surprising that we should have many new laws affecting public health, though the ground is certainly not properly covered even yet.

The Public Health Laws of a country, State or community are of the utmost importance to every inhabitant. Nor does the interest cease there, for so bound up are we in our relations to our fellow men that the health laws, regulations and ordinances of other countries, cities and communities and the manner of their enforcement become almost as important to us. In the enforcement of such laws we are brought face to face with the fact that in these days of tremendous activity and commerce, of rapid immigration and of easy intercourse between the countries of the world, when many of our uneasy millions of people are constantly passing from one place and from one country to another, the opportunities for the spread of epidemics of contagious diseases are continual and are constantly on the increase.

The attention paid to the subject of public health in recent years, the quickening of the public conscience regarding improvements in our manner of living, the value and necessity of sanitary reforms along many lines and the fact that the intelligent public must be protected from the ignorant and careless, would indicate that our improved system of safeguarding the public health was a thing of recent growth. But while it is true that we have made tremendous advances in the last twenty-five years in our scientific knowledge of the causes of disease and also in sanitary science generally, the fact remains, and the student of history knows, that some of the ancient nations understood in many respects the value of sanitary methods of living and that they paid intelligent attention to the subject.

In early history we find a code of sanitary regulations given for the children of Israel through Moses which could still be applied with good results at certain localities in any of our States. Indeed, the commands laid down in Leviticus and Deuteronomy to the children of Israel for the preservation of their health and safety could still be read with advantage by many of the civilized and educated inhabitants of the globe in the twentieth century.

It is well known that some of the older countries understood the value of a pure and never-failing supply of water and the water supplies of some of the ancient cities would put to shame those in use in a number of the cities in New York to-day. A comparison of the system of public baths in Rome with the entire lack of such facilities for personal cleanliness in many of our modern cities is enough to make one pause and ask how far we have really progressed.

So also, we find in Rome laws against the adulteration of food and other restrictions designed to protect the health of the Roman citizen, the brilliancy of whose empire can never fade nor pass from the minds of civilized men. So from those early days to the present time we find that every *civilized* government has recognized to a greater or lesser degree the absolute necessity of laws which would protect mankind against their own indiscretions and neglect of sanitary precautions. As a result, we find the countries which have exercised the most careful restrictions have been the most free from the plagues which have scourged the old world to such a startling degree. The great improvement in methods of living, the introduction of proper water supplies and sewerage systems and the constant vigilance of the health official have rendered almost impossible to-day, a repetition of the epidemics which formerly swept over the old world, and which caused such tremendous mortality.

It is said that the black death in its European invasion in the fourteenth century caused the death of 25,000,000 of its inhabitants. You are all familiar with the ravages of cholera and other diseases, the appalling accounts of which are recorded in history. The introduction of sanitary improvements and proper preventive measures have rendered a repetition of such calamities practically impossible. Yet with all the striking advances that have been made, it is with difficulty that the public can be convinced of the importance of the prevention of disease.

We know the tremendous price in lives and money paid by the world for its neglect of sanitation and it is a sad commentary on our much vaunted civilization of to-day, that with the scientific knowledge which we now possess and our demonstrated theories of causes of disease and their prevention, we still allow consump-

tion, typhoid and other preventable diseases to exact such an enormous toll of loss and suffering from our fellow men.

The welfare of State and citizen alike demands that the law-making bodies should recognize the necessity of protection against the ignorant and vicious to the end that their lives and habits should be regulated in such a manner that they should not be a danger to others.

THE RIGHT TO ENACT HEALTH LAWS

If you grant that the welfare of the State is served by its protecting its citizens, then it needs no argument to demonstrate the right of the State to enact such laws as are necessary to accomplish this purpose even though the effect of these laws is to interfere with individual freedom and the use of private property. Our courts have almost universally recognized this right and when called upon, as they often have been, to uphold laws designed to protect public health where liberty of action of the individual has been restricted, they have shown their wisdom and have established the health official in a firm position. The principles upon which these rights are established rest upon the broad foundation that everyone owes a duty to his neighbors to do nothing to imperil their lives or health. The interest of no one can be higher than his neighbors', and he may be restrained from injuring the community, although he may live and die as he pleases, provided he does not endanger the life or well-being of others. It would seem, therefore, that it was one of the most important functions of government to provide for the welfare of the people by uniform laws designed to promote public health. Indeed, society could hardly exist without such laws and every instinct of self-preservation justifies their adoption.

Despite the general indifference to the subject, statesmen long ago appreciated the importance of legislation to preserve public health and raised their voices in its behalf.

Lord Derby realized, however, the ineffectiveness of health legislation without an intelligent public opinion behind it, when he declared long ago that "no sanitary improvement worth the name will be effective, whatever acts you pass or whatever powers

you confer upon public officers, unless you can create an intelligent interest in the matter among the people at large."

The subject was splendidly summed up in New Orleans in the year 1880, by Hon. Erastus Briggs, a member of the State Board of Health of New York, created that year.

He said, "*I place the subject of health as among the first, if not the very first, in the science of political economy. It is a question which belongs to the wealth of the Union and the prosperity of the people. . . .*

"A most important state duty is the enactment of wholesome laws to prevent disease. This is done without infringing upon the personal or political rights of any citizen. . . .

"A decent care for the people of the state and a decent respect for the government by the people establish reciprocal relations which no party can neglect."

Acting therefore upon the advice of statesmen and scientists, and firm in a position that cannot be successfully challenged, our law-making bodies entered upon the task of affording the necessary statute authority to accomplish the desired. How well they have succeeded, and what some of the defects and requirements of to-day are, I shall endeavor to show.

THE GROWTH OF THE LAW

In furtherance of the principles we have exhibited, governments have from time to time passed laws designed to regulate and protect public health. Starting with the simplest regulations designed to insure personal cleanliness and habits and for the use of unadulterated food, we have seen the vast and complete system of modern living develop to a point where laws and ordinances are required to meet every new condition that arises.

The changes in modern methods of living from those when each family prepared its own food and when the country was sparsely settled, to the present time when we find our population crowded together into tenement and apartment-houses in our cities, have developed new and modern methods of protecting and fostering the health of the people. The advance in knowledge of how diseases are spread, particularly the discovery of the germs

of diseases and the work of bacteriology have wrought a great change in the care of cases and their relation to the general public.

Modern mechanical and electrical inventions have wrought a necessity for regulations as to their use. The vast immigration of citizens from one country to another and the consequent necessity for guarding against diseases has obliged us to establish quarantine stations at our seaports and make a careful examination of each vessel, its cargo and passengers, before we allow them to enter. To-day the commerce of the world is enormous, opportunities for infection and the spread of diseases are practically unlimited and we must even interfere with commerce to save ourselves. It is therefore apparent that our health officers and our law-giving bodies have had many new and complex problems to solve and are obliged to pass upon new ones almost every day.

As might be expected, we find little uniformity in public health legislation in our many States. Some few have gradually developed, and by passing new statutes as the occasion required have built up a fairly comprehensive system. Others have created a State Board of Health, given it small powers and less funds and accomplished but little. Many are now awakening to the importance of the subject and are ready to put in force laws which will be of great and lasting benefit.

The health laws cover a wide range of subjects, including the protection of public water supplies, the control of contagious and infectious diseases, the disposal of sewage and pollution of streams, vital statistics, nuisances, vaccination, and many other topics. No attempt will be made here to speak of any other than those immediately concerning the State Department of Health or local boards, and references to the Public Health Law generally should be understood as excluding the other provisions which deal with subjects we are not called upon here to discuss.

THE LEGAL AUTHORITY AND THE POLICE POWER

Having attempted to give you some idea of the field to be covered by the law, let us see where the legal authority is vested and how it is exercised. As we have in the United States no National Department of Health and therefore no branch of the

Federal Government dealing directly with this subject, the matter becomes one almost entirely for State and municipal regulation and the States of our Union have widely varying acts covering the subject. Pennsylvania and New York have a State Department of Health with a single head or Commissioner of Health, while most of the States have a State Board of Health usually made up of physicians with the secretary as the executive officer. In addition to this, there are local boards of health or health officers, or both, given arbitrary powers to regulate, protect and preserve the public health.

As you well know, the States of this Union surrendered to the Federal Government only such powers as were necessary to provide for the common defense and promote the general welfare of all the people of the United States. They reserved to themselves the sovereign control over their internal affairs. The authority of the State is supreme and exclusive in this regard. In the exercise of this unlimited jurisdiction within the Constitution over all persons within its limits and acting under what is called the *police power*, the State imposes the health laws, and the Legislature has a vast power in its possession which it can exercise, provided it does not exceed the legislative functions vested by the Constitution.

The exercise of the police power being for the promotion of the public good, it is therefore superior to private rights and interests and under it the State can impose such restrictions as are necessary to secure the health and safety of the public, so manufacturers in businesses of various kinds may be restrained or discontinued and the rights of the individual subordinated to those of the public. So the owner of property, although holding an absolute title, must use it in such a way that his use of it shall not be injurious to the rights of others. The citizen must regulate his conduct and conduct his affairs so that they do not come in conflict with the general rules for the common good. But the power of the Legislature is subject to the provisions in the Constitutions. The fourteenth amendment to the Constitution of the United States declares that:

“No state shall make or enforce any law which shall abridge the privilege or immunities of citizens of the United States,

nor shall any state deprive any person of life, liberty or property without due process of law nor deny to any person within its jurisdiction the equal protection of the laws."

but it has frequently been held that this amendment does not abridge or impair the exercise of the police power of the States and apparently the principal purpose of this provision is to prevent any arbitrary interference by State authority in the rights of person and property and to secure to all happiness unrestrained except by equal and impartial laws. No greater burdens may be laid upon one than are laid upon others in the same calling, and in the administration of criminal justice no different or higher punishment shall be laid upon one than is prescribed to all for like offenses.

The police power may be used to regulate the use of property, and the protest that is so frequently raised in regard to the exercise of many of the health laws, to the effect that this is a taking of property without due compensation, cannot be sustained. For while the owner is restricted in the use of his property it is not appropriated and in the theory of the law he is compensated by sharing in the general benefits which the requirements are calculated to secure.

But while the Legislature can pass laws needed to protect the public health and the courts cannot review its discretion in this respect, these laws must have some relation to the end to be attained, for the rights of the citizens cannot be invaded by the Legislature under the guise of a police regulation for the protection of health. Where it appears that that is not the object of the statute and no matter in what language the statute may be framed, its purpose must be determined by its reasonable effect and it cannot impair or destroy rights secured by the fundamental law. The Legislature can pass laws to prevent injury to the public but they are, of course, subject to review by the courts and they cannot go beyond the necessities of the case. Many interesting and conflicting opinions have been rendered in our courts upon the intricate questions involved, which I shall make no attempt to review here.

FEDERAL AND STATE CONTROL

But few people remember that at one time there existed in this country a National Board of Health created by act of Congress in 1879, consisting of seven members appointed by the President and created to make investigations and perfect a plan for a national public health organization. The scheme of co-operation of State and local boards was excellent, but unfortunately the board survived but a few years, Congress failing to make appropriations to maintain it.

This is of especial interest at this time when a strong effort is being made by organized bodies to create a National Department of Health. There are, of course, many regulations of different departments of the Federal Government and acts of Congress which have a bearing upon public health. The Federal Pure Food Law and the laws requiring meat inspection are notable illustrations. There is also the United States Public Health and Marine Hospital Service which does some very effective work in the study and control of contagious diseases and in other important lines, and which holds an annual conference with the State Boards of Health, but it cannot at present deal with general public health problems as a properly equipped National Department of Health would. Legislation has been introduced to strengthen their hands, give more authority for investigation and increase their usefulness and I sincerely hope Congress will pass it. The United States Census Bureau makes a careful and complete study of the vital statistics of the country, and is doing valuable work.

While I am heartily in favor of extending the field of the Federal Government in public health work, the excellent service being performed by existing branches of government should be recognized, and it is clear to anyone with practical experience in public health administration, that some of the things it is proposed to have a Federal Department of Health undertake are practically impossible.

Many organized bodies and voluntary associations are to-day clamoring for a Federal Department of Health, for more State control, and for larger expenditures of public funds for the protection of public health.

We should welcome them all for their influence is good, and the publicity attained will be of benefit to the work, but it is strange how seldom any of these associations make an effort to support or strengthen existing agencies.

I believe their efforts ought, in part, at least, to be directed to the assistance of those departments of government already engaged in this work and to those officials now struggling to promote the public welfare with inadequate laws and insufficient funds.

The statutory provisions defining the powers and duties of State boards or departments of health in the different States of our Union vary greatly, although of late years there has been some attempt at uniformity in the work and where one State Board of Health has done effective work along certain lines the others have been quick to follow. As a general rule, State Boards or Departments of Health are not vested with large powers, although there is a very widespread popular impression that they have practically unlimited authority. As a matter of fact, Legislatures have been slow to grant authority to State health officials and for years many of them have investigated and pointed out conditions sadly in need of improvement without the authority to force the desired end. The functions of a State Board of Health should be largely supervisory — the local boards of health should be so organized and equipped that local nuisances and minor matters of that character could be speedily determined by them and the State Board of Health could exercise its powers in the control of more important matters. In the prevention of the spread of epidemics of disease and safeguarding public water supplies and the protection of the stream from pollution and in countless other ways, all involving matters which no one local board of health could possibly be in a position to undertake, the State Board of Health should be supreme.

Most of the States give the State Board of Health a practically unlimited authority to investigate, but along few lines do they have the authority to make their recommendations effective. They usually are required to collect the vital statistics of the State and study the sources of mortality and the effects of localities, employments and other conditions upon the public health.

The earliest laws on the statute books of the State of New York regarding public health were the quarantine laws for the port of New York, the first one of which was passed by the General Assembly of New York in 1758. The epidemic of yellow fever which prevailed in New York City at that time called forth the act of 1799, which authorized the erection of a hospital on Staten Island. For the first time, in 1801, vessels with cargoes from infected ports were prohibited from approaching to the wharves of the city.

In 1801 the resident physician of the Maritime Hospital, the health officer of the port and the health commissioners were constituted a board of health for the city of New York. In 1803 yellow fever again raged in the city and an act was passed in 1804 which prohibited vessels from infected ports approaching nearer than 300 feet of the wharves of the city. Cholera, which was prevalent in 1831 and had a very large mortality in the city of New York, called forth legislation in 1832.

This is, in brief, the history of the earliest legislation in the State of New York attempting to regulate matters relating to public health.

The legislation which marks the commencement of the existing Public Health Law of the State of New York began in 1847, when an act was passed providing for the registry of births, marriages and deaths in this State. Frequent additions were made to the provisions of the Public Health Law down to the year 1880, when an act was passed creating a State Board of Health and defining the powers of the board.

This marks the beginning of any comprehensive plan by the State for the protection of the public health, the registration of vital statistics and the direction and assistance of local boards in the performance of their duties.

In 1893 the Legislature passed a bill (Chapter 661) received from the Statutory Revision Commission, which codified all the health laws of the State and repealed a large number of acts scattered through the statute books from 1854 to that time. Some important amendments were added to Article I, conferring power upon and prescribing the duties of the State Board of Health. It extended the powers of the State Board of Health in some

important particulars. It conferred authority upon the State Board of Health to enter into a municipality and appoint a health officer for it to perform the duties of the local board until such time as the authorities shall appoint a board that conforms with the law. It also placed under the jurisdiction of the State Board lands taken over by the State for sanitary purposes. This amendment was found necessary by reason of the experience in 1892, when cholera was in the bay of New York City. It further required local health officers to report such contagious diseases as the State Board might require.

Acting under this revised and codified Public Health Law, with occasional amendments thereto, the State Board of Health proceeded up to the year 1901. During the organization of the State Board of Health from 1880 on it had been divided into committees to whom various matters were referred and had maintained an office in Albany with a secretary as the executive officer and whose duty it was, in large part, to see that the provisions of this law were enforced. The State Board and its separate committees met at frequent intervals, usually quarterly or monthly, directed investigations and carried out the provisions of the law generally.

In 1901, by Chapter 29, the Legislature passed an act amending Chapter 661 of the Laws of 1893, creating a State Department of Health and the office of Commissioner of Health, and abolishing the State Board of Health. This act in effect conferred upon the Commissioner all the powers and duties originally held by the State Board of Health.

The action of the Legislature in abolishing the State Board of Health and creating the State Department of Health was radical and without precedent among the States of the Union. The State Board of Health had been in active operation for twenty years before the passage of this act, had done some effective work in investigations, in the control of diseases, protection of the public health, etc., the importance of which can hardly be overestimated. It is a fact, however, that the organization of the State Board as it existed necessarily very frequently delayed prompt action upon the various matters before it and it is safe to assume that the action of the Legislature in abolishing this State Board

and creating the State Department headed by a single Commissioner was for the purpose of rendering more effective the work of the State Department along these lines, to facilitate prompt action and to gather into one strong hand the various powers heretofore delegated to committees and thereby to improve the efficiency of the work of enforcing the provisions of the Public Health Law. The department has, therefore, been in operation nearly nine years, during which time numerous additions have been made to the powers already conferred upon it.

Pennsylvania followed the example of New York a few years ago and created a State Department of Health, but unlike New York it has been willing to expend large sums of money for the enforcement of the laws, and in many respects stands in a unique and over-shadowing position among the States of the Union in public health work.

MUNICIPAL REGULATIONS

Municipal corporations can be created in several different ways. Some cities and villages have granted them a special charter from the Legislature, different, perhaps, in its form from any other. Others are organized under the existing State laws and the powers granted are similar to those given to other places, but usually the municipal corporation has the power granted to it very expressly in the charter or by a general clause under which the corporation is organized to adopt regulations for the protection of the lives and health of the people, subject always, of course, to the provisions of the State laws. In other words, the State delegates to corporations organized for local self-government, the power of legislating in respect to these matters, although this power is always under the control of the Legislature and may be changed at any time.

So we find cities and villages of our States passing ordinances and regulations to provide for the abatement of nuisances and the reporting of cases of contagious diseases and prohibiting a large number of different acts which it is believed would be injurious to the public health. In the enforcement of these ordinances they can, of course, use the police officials of the city and in a properly governed city we find more regard for sanitary laws than we do in the rural districts. The ordinances and regulations adopted

are, of course, operative only within the corporation limits, but they cover an extremely wide range of subjects. The charter of the city of New York provides for the organization, authority and duties of the City Department of Health, and gives it wide powers and authority to control all matters affecting public health. We find in New York City a high development of public health work, and a splendid organization which has accomplished much, difficult as the problem is. The Sanitary Code of the city of New York contains several hundred provisions, all having a bearing upon some matter relating to public health. These ordinances must of course be reasonable, consistent with the charter and with the legislative policy of the State, and not discriminating in their operation. They usually fix a penalty for their violation. The scope of these ordinances of course varies widely in different States and in different parts of the country and some of them are very curious and very interesting. In New York State there are over 1,400 local boards of health each having local ordinances and regulations, in addition to our laws.

Municipal control is extremely important in the consideration of this subject as the municipal ordinances having the force and effect of law come very close to the people and must be constantly observed. The housewife who is hauled into court for leaving the garbage can upon the sidewalk and the man who is fined in the police court for spitting in a street car, both learn to respect health regulations. All kinds of business are regulated, unhealthful and unwholesome foods are seized and destroyed, offensive trades are banished from the city, and the keeping of animals is carefully regulated.

DEFECTS IN OUR LAWS

While an attempt has been made to point out the progress there has been in legislation as affecting public health, no one should infer that we have developed anything approaching a perfect system.

Public sentiment has been slow to crystallize in favor of sanitary reforms, and such legislation as we have had has usually been brought about by the work of a few enthusiasts rather than from force of public opinion.

New York is not alone in her difficulties in securing proper laws for other States have also experienced this, but the fact remains that the Empire State is far behind the position it should occupy in this regard and has been sadly neglectful of many important matters. Legislation has been recommended repeatedly on many subjects, but seldom has it been enacted into law. To recite the discouraging and fruitless efforts to secure proper public health laws in this State would be wearying to the flesh.

Our present laws are in many respects sadly out of date, and need a careful revision. The great difficulty seems to be in interesting our legislators in questions of this kind. Any public health law that is of any value will sometimes conflict with local desires, and here a great obstacle is met with, each legislator heeding the protests of his people, as a result defeating legislation for the general good of the State. This shows a lack of statesmanship not for the best interests of the people at large.

Sanitary work must, of necessity, be largely local. Proper State authority is necessary and every State needs a strong and capable State Health Department. But a large part of the work will continue to be done and must be done by the municipalities of the State. The question in New York State is, I believe, how to make the work of local boards of health more effective. My firm opinion in the matter is that the time has come when we should consider the desirability of changing our system of local boards.

They fail of effectiveness at many points, and from lack of knowledge often fail to support the health officer, where his medical training shows the wisdom of action. The system is an old one, but it is obsolete in many ways. The authority should be in the hands of trained health officers, with authority to act promptly. The laws should be made more definite, so that it would be clear where the health officer had power; as our laws stand at present it is impossible in many cases for a board of health to know whether or not they can act with safety.

There should be some more effective system of control over local health officers by the State. Where indifference, neglect of duty, or inefficiency prevails, the State Department should be able to step in and act with a strong hand, for the protection of the citizens of the State, and until this is done we will ha

avoidable epidemics of disease and unnecessary sickness and death in many places.

The power now vested in the State Commissioner of Health to investigate and recommend is well enough, but fails of its purpose in many instances. Not long since the department recommended that a village take steps to clean up its watershed. Through the almost criminal neglect of its board of water commissioners this was not done, and as a result there was an epidemic of typhoid, with over 70 cases and 20 deaths. The expenditure of a few hundred dollars would have saved this. The dangers of neglect are not confined to any locality, for every citizen of the State is affected and may suffer.

Our laws regarding the pollution of streams need a thorough revision if effective work is to be done. To attempt to point out all the needed changes would be fruitless. You are all aware that in many important respects these laws need revision. We hear a good deal about needed changes in criminal law; the State has revised its banking and insurance laws; and any legislation affecting a commercial interest, or our financial supremacy, is carefully considered, but the Legislature with a few exceptions is indifferent to the needs of public health. Worse than this, they are not willing to be guided by those who should know what needs to be done along these lines. Ours is a great State in many ways,* but not yet great in its care of the public health.

The educational work that is being done will effectively arouse the public, and we shall then have the legislation we need — but not until much needless sickness and death have been caused. Every man here should do his part to see that the Legislature realizes that public health questions are entitled to proper attention and consideration.

Our duty is clear, we must exhibit the interest we feel and show it effectively. We need, more than any spasmodic reform, that high ideal of citizenship and its opportunities which will place our public affairs on a higher plane, give us better qualified officials, more intelligent consideration of the wants of the people, and a better understanding of our own needs and responsibilities.

And in the place of general indifference we must have an active and hearty public support of earnest and intelligent public

servants in every line of endeavor where they are urging proper measures.

THE CHAIRMAN — Gentlemen, that paper is open for discussion. There are the names of several gentlemen on the program, who may care to say a few words in relation to it.

DR. JOHN W. LESEUR — I want to acknowledge with becoming contrition that I merited the brilliant reproof which the lady (Dr. Rosalie S. Morton) gave me in saying that the privileges of this convention should be extended to both ladies and gentlemen professional, and I want to state, as the action was unanimous, that we should apologize to the ladies, and say, that in a general way, in any motion that a physician makes, professionally, that it is his intention in every proper and dignified and courteous way, to embrace the ladies.

I have listened to this paper of Mr. Seymour with profound interest. I believe that in the opening sentence of this paper is a watchword which may well be adopted by every health officer in the State. The Public Health Law is of vital interest to every citizen in the State. That is a statement broad as truth and high as a noble purpose, and as wide reaching in its scope as the hopes of humanity. We cannot too fully appreciate nor too deeply realize the importance of the paper to which we have just listened. The importance of the topic, the Health Law, the fundamental government of the citizens of the State in their effective carrying out of the law, the relation to citizen of the law which the citizen, through his representative, establishes for the government of the citizen, these considerations are vast in their comprehensiveness and importance.

The importance of the Public Health Law is just being realized by us. The essayist in an exhaustive way related for you and me the importance of the Public Health Law in its various ramifications, for there is no department of human life which is not touched from center to circumference, by this Public Health Law; and from the highest official in this department down to the humblest citizen who strives to do his best on the four corners somewhere, where circumstances may have placed him, the importance of our part in this great work cannot be overestimated.

If time permitted, it would be interesting to dwell upon this topic, but the essayist spoke learnedly on the question of the law; and I doubt not it was a matter of profound regret to him that more cannot be said on this subject.

We have enacted laws of every kind. We have sent our more or less intelligent legislators to our halls of legislation, and they have striven to enact laws which they termed for the benefit of humanity, and although there have been laws for the great and small, laws for the actual control and benefit of the public health are not as numerous and concise and helpful as you and I wish they could be.

So no more can be said on the topic of the Public Health Law than at the present time it lacks development, and needs a scientific care which President Schurman referred to in speaking of the establishment of a training school for sanitarians. That shall make it possible to present to the citizens a law which shall commend itself to their judgment, and demand from them such hearty support as makes law most effective. If we had the time, and there was nothing better waiting for us, we could dwell on this topic for some time.

But let us now pass to the defects in the law referred to by the essayist. It is not very difficult to find fault even with a very good law, but I also submit for your approval this statement: that in the Public Health Law, in comparison with the laws of the State, a notion that the defects in the Public Health Law are glaring, that the Public Health Law does not provide for that control necessary for the best results, nor for the accumulation and distribution of money is necessary to secure the best results. In stating these two facts, I state facts, the truthfulness of which you must appreciate, and you cannot fail to understand that until those defects are remedied, of course the law will not be perfect.

No man realizes the need for improvements, and no man with a given degree of intelligence is more likely to discover suitable methods of improvement than the man who is brought into direct contact with the thing which is to be improved. Then, the statements that Mr. Seymour has presented to you are worthy of your earnest consideration and, if I had time to dwell upon this, I would like to go over the subject item by item. But I wish to say that the importance of having the hearty co-operation of every citizen of the State cannot be too fully emphasized, and the importance of having the hearty co-operation of every health officer of the State is also important; and although it is true that, as President Schurman said, you do not know much, and that for ignoramuses you make a pretty attractive bunch, it is true that high as President Schurman's ideal is, and fully as we all recognize it, and would be glad to attain to it, yet for the present and to-day, the best we have is the humble health officer plodding on as best he can. And in his little community there is a bunch of taxpayers who have accumulated something of this world's goods, and they believe that old fool of a doctor knows something. And they are influenced to a degree by what the health officer says, and because that is true, it opens to you a field for action. It gives you an opportunity to say to your individual patients and taxpayers and assemblymen and senators, "Men, the time has come for us to rise in our might and do our best. And in our respective spheres strive to do away with some of those preventable diseases which have made us share with others the sorrows of untimely death, and made us partners in the great national losses which have come as a result of inefficiency in our health laws."

THE CHAIRMAN — The next paper is by Dr. Marshall L. Price, Secretary of the Maryland State Board of Health, on "The Registration of Tuberculosis."

Our tuberculosis laws, I am sorry to say, are not being carried out as they should be, and I know you will be glad to hear Dr. Price speak on this subject. Then you will understand the point I made, that New York is not, as it should be, the foremost State in the world in this field of work. Dr. Price has come from Baltimore to explain how he has carried on his effective work, and I am glad to be able to present him to you.

THE REGISTRATION OF TUBERCULOSIS

BY MARSHALL L. PRICE, M.D.

Secretary, Maryland State Board of Health

In addressing this distinguished body of sanitarians on a subject of so much importance to the public welfare, I must apologize in advance for saying many things which to you will be mere platitudes, but which are of sufficient importance to merit reiteration. On the other hand, to give a proper idea of the subject I must extend the scope of my address somewhat beyond the boundaries which its title indicates. No anatomist can give a proper idea of the functions of the arm by a mere description of the amputated specimen, but must describe also its anatomical relations to and correlated functions with other parts of the body.

In like manner, and for the same reasons I must touch briefly upon registration in general and the registration of communicable diseases in particular, to give a proper idea of the functions and relations of the registration of tuberculosis with registration in general and to properly fix its place in the body politic; for it is my purpose to show that the registration of tuberculosis is not only the logical growth of the registration of other communicable diseases, but it is a part of the great national movement for the conservation of our natural resources first among which in importance and value is our population.

It is unnecessary to recall to this audience that registration is the fundamental and essential step in the control of communicable diseases, and must necessarily precede all other measures of control, but we do not all realize the magnitude of the step which has been taken in the registration of the chronic communicable diseases, as against the registration of the acute communicable diseases, with which sanitation dealt exclusively in the past. This step is in fact the significant feature of the widespread legislation for the registration of tuberculosis and the means of control dependent thereupon.

We can understand better the attitude of the enlightened among officials and the public toward the registration of tuberculosis at

the present day by comparing the attitude of the same class of officials and the public in the past, toward the registration of the acute contagious diseases.

In the United States registration has been of comparatively recent growth, and its progress has been difficult and slow. The reasons for this are, I think, not hard for any student of national life and customs to fathom. Registration, like other sanitary advancement, is particularly the product of civilization, and the United States has not been in the past a highly civilized country, nor are the Americans now a wholly law-abiding people. I am not lacking in patriotic pride for my own country in making this statement. The general public is prone to regard the term "civilization" as synonymous with high mental and moral development, and this mental confusion has also clouded the minds of some of the historians. History does not bear out this view. Civilization must be regarded merely as an intensive and specialized mode of life, and many distinctly second grade nations have established comparatively high civilizations. A pioneer race such as the Americans, fully occupied with the struggle to maintain individual life and the perpetuity of the race, against human enemies and the hostile elements of nature, could not be expected to devote much time to the problems of how to make life more happy and prosperous; and it is really only in the past few generations that the nation as a whole has taken up the serious consideration of these problems. The vigor and strength of the American people has proven that it is not always the most intensive life that makes for the highest development, and the nation which has like all pioneer nations been wasteful of its natural resources and indifferent to the value of human life has now entered on the second phase of its existence and is now developing what we hope will be the highest civilization of the world.

In the registration of tuberculosis and its legal regulation, the United States is far in advance of the older countries as anyone must acknowledge.

To show that the registration of communicable diseases, even of the chronic communicable diseases, is founded in ancient custom and is not a novel or radical idea, I will cite an example from the sanitary laws of the Book of Leviticus (about 1500 B. C.).

In understanding the meaning of this somewhat obscure paragraph it must be remembered that the form of notification prescribed by the sanitary laws of Moses was by verbal information to the priest, or the presentation of the patient for his inspection. The priests in Palestine in addition to their ecclesiastical duties were also physicians and health officers. The word "unclean," though it had several different meanings, was generally synonymous with "disease." The following is the quotation taken from chap. 5, 3, of the Book of Leviticus:

"Or if he touch the uncleanness of man whatsoever uncleanness it be that a man shall be defiled withal, and it be hid from him; when he knoweth of it, then he shall be guilty."

The fine for this offense was a female lamb or kid of the goats.

Though tuberculosis is not described in the Book of Leviticus, it seems probable that it was recognized as a contagious disease and as such notifiable from the following passage (Lev., chap. 15, 8):

"And if he that hath the issue spit upon him that is clean, then he shall wash his clothes, and bathe himself in water, and be unclean until the even."

The word "issue" in this quotation evidently corresponds to the anglo-Saxon "discharge," or when used as a noun, to the word "pus," and apparently includes discharges from the internal organs as well as from the skin.

The most complete and explicit provisions of the sanitary code of Israel were directed against leprosy, a chronic disease similar in many ways to tuberculosis and caused by an organism very similar to the tubercle bacillus.

It is somewhat remarkable that this sanitary code should have had so few references to the acute pestilences which swept the country at intervals, but it must be remembered that Judea was an isolated country surrounded by a desert and that these pestilences came and went like a storm and were consequently regarded as "visitations" against which human efforts were powerless. On the other hand, leprosy being a disease contracted by close contact and always leaving visible marks, the spread of the disease from endemic centers must frequently have been a matter of personal observation.

To illustrate the attitude of the mediaeval officials and public toward the registration of communicable diseases, I will cite the ordinance passed by the Lord Mayor and Aldermen of the city of London which went into effect July 1, 1665. It will be noticed that the notification of communicable diseases in mediaeval times was generally enforced only after an epidemic had appeared and had done all the damage possible. This attitude of mind still seems to linger in the minds of many of our law-makers and officials, not to mention a certain class of the medical profession. This fine old classical example of locking the stable door after the horse escapes reads as follows:

"The master of every house, as soon as any one in his house complaineth, either of blotch or purple, or swelling in any part of his body, or falleth otherwise dangerously sick, without apparent cause of some other disease, shall give knowledge thereof to the examiner of health within two hours after the said sign shall appear."

The ordinance in which this section appears was passed under the authority of an act of Parliament entitled "An Act for the Charitable Relief and Ordering of Persons Infected with the Plague." As already noted, this ordinance was passed and enforced when the epidemic of plague was widely disseminated in London, and when it consequently could not have been expected to accomplish very much good.

It was only to be expected that the persistent opposition which appeared when the first attempts were made to register the acute communicable diseases should reappear, though in lesser degree, when the registration of tuberculosis first became established in our statute law. Practically the same arguments were advanced against the registration of tuberculosis which were advanced when the registration of the acute communicable diseases were first provided for by law. I have already cited the old mental attitude toward the registration of communicable diseases, but as all these old arguments have been advanced as new, it is well that we take them up in their special relation to tuberculosis. The arguments against the registration of tuberculosis and the opposition to measures of control fall under two heads: First: General opposition from the public. Second: Special opposition from the medical

profession. Curiously enough in my experience the arguments against the registration of tuberculosis, even those of medical men, are largely founded on this theory of public opposition. Maryland was the first State to adopt a State Registration Law, and at the time the following predictions were made by some of our medical prophets:

1st That the public would be opposed to the registration of tuberculosis.

2d That patients would be opposed to having their cases registered.

3d That the Registration Law could not be enforced. In the light of five years' experience I am constrained to believe that even prophets may occasionally arrive at wrong conclusions, for the following reasons:

1st The public is not opposed to registration, but on the contrary is heartily in sympathy with the movement.

2d The opposition of the patients themselves, either has not appeared at all, or is such a negligible factor that I have never been compelled to give it serious consideration. In fact many patients register their own cases and receive the State supplies.

3d The Registration Law can be, and is enforced. I have reason to believe that practically all of the cases of tuberculosis now in Maryland are registered and our files include every class of case, from the colored day laborer up to the millionaire.

The most serious charge that has been made against the registration of tuberculosis is that it is an infraction of "personal liberty." This charge is strictly true. Every advance that has been made from savagery to civilization, has been made through infractions of "personal liberty." In civilized communities the "personal liberty" of an individual to carry away his neighbor's wife or daughters is restrained by law. The law likewise restrains the "personal liberty" of an individual to carry away his neighbor's goods and money merely because he desires their use. We can imagine one of the old barons growing red in the face with virtuous indignation at the passage of a law preventing him from killing and robbing his peasantry. As I am not very familiar with ancient English I hope I may be pardoned for giving the baron's remarks in colloquial English as follows: "This here

law ain't no good. It's nothing but a fad. I guess what was good enough for my father and grandfather is 'good enough for me.'"

I hope I have sufficiently shown that the alleged public opposition to the registration of tuberculosis is largely a figment of the imagination. This leads us to the really serious obstacle in the registration of tuberculosis, namely, indifference or opposition on the part of the medical profession. The source of the most serious difficulty with the medical profession is the code of medical ethics or rather a perversion of that code. In the relation between the patient and his physician, our code of ethics, and indeed the statute law of many States, recognizes that certain information which comes to the physician through his professional relations with the patient, must be held inviolate. This we must recognize, but within certain limits only, as a just and proper law whether written or unwritten; but it is bad ethics and bad law to hold, the individual's rights superior to those of the State. If the code of medical ethics holds that "the rights of the patient are always supreme over those of any other individual, class or community," such a code is a bad one and should be substituted by a more civilized code, namely: "The rights of the community are always supreme, the rights of the patient are only supreme as long as they do not involve danger or damage to the community." The "reductio ad absurdum" of such a code would be to hold that, as far as the physician is concerned, no one but the patient has any rights which the physician need consider; or that to guard his patient against the trivial and generally apocryphal injury of registration, the physician is justified in sowing disease and death among the innocent individuals of a community. The best remedy against this state of mind is to provide by stringent statutory enactment for the secrecy of the records and against their improper use. This provision is in the Maryland law and is also in the laws of New York State. It is thoroughly enforced in Maryland, as I hope it is, and will be in New York. I have been prepared in my own State, when records of tuberculosis were demanded by the courts for legal purposes, particularly in civil suits, to employ a lawyer and to defend the secrecy of the records to any extent short of going to jail for contempt. I merely mention this because all health officers are not equally careful. In

one of our large eastern cities some time ago one of the employees of the city laboratory was discovered selling the names of tuberculous persons in whose sputum the tubercle bacillus had been found, to the quack vender of a "consumption cure." This individual should have gone to jail, but escaped with being discharged. I think also the more modern views about the hereditary nature of consumption have done a great deal to overcome this kind of opposition.

I must refer also to the vicious effect of the action of some of the insurance companies in refusing, especially in industrial insurance, to pay policies in death from tuberculosis upon the registration of that disease. This has been done for business reasons and to meet competition and can only be overcome by the passage of laws forbidding the vitiation of policies for deaths caused by any communicable disease. We should make it our business to see that such laws are passed in every State. The insurance companies can then meet the situation on an equal footing by general increase of premiums or by more extensive provisions for physical examinations. The present practice puts a premium on perjury and strikes at the root of accurate registration, and should not be tolerated in any State. I am sure that in Maryland this sort of industrial insurance has seriously vitiated our records of tuberculosis, and I have no doubt the same conditions exist in New York State.

One of the most curious of the obstacles which has arisen to the registration of communicable diseases and which applies with special force to the registration of tuberculosis is the somewhat widespread idea among some of the medical profession that a registration law cannot be enforced unless a fee is provided for registration. No doubt some of you have encountered this peculiar attitude in New York. It is needless to say that such a notion is not recognized by any law, either common or statute. In the class of physicians the argument is especially weak because practitioners of medicine receive special benefits and privileges from the State. In all States physicians are exempted from jury duty and from military service, and in Maryland, New York and now in practically all of the States, physicians are a licensed class.

All the members of a licensed class are prone to hold the erroneous view that the licensing of their trade or profession is done for the benefit of the class, and this view is held by many practitioners of medicine. Nothing could be farther from law or common sense. Although I have before stated my views on this subject, I feel that this mental attitude is such a real obstacle to the registration of tuberculosis that it can do no harm to repeat them. The Constitution guarantees to each individual the right to earn his livelihood according to his own interests and desires. The restriction of an occupation for the benefit of the class is clearly unconstitutional and no individual can be restrained from pursuing the occupation which he elects, unless it can be shown that the pursuit of such an occupation by unskilled persons involves the community in special dangers. For this reason a number of skilled occupations are licensed, because their practice by unskilled persons would involve individuals or small groups of persons in dangers from which they (the individuals), not being specially qualified to pass upon technical knowledge and skill, would be unable to protect themselves. Certain other pursuits must be classified as "dangerous occupations" because their practice by unscrupulous and unqualified persons would necessarily involve the whole community in danger. It is in this latter class that the medical profession properly belongs.

The term "license" thus implies special privilege and special restriction. In the issue of the license by the State there is an implied obligation on the part of the State to accord certain privileges to the licensee and an implied contract on the part of the licensee to obey the laws of the State, and to give the State the benefit of his special knowledge. The State does not license any person to violate its laws. In this particular instance the physician is licensed to pursue a dangerous occupation involving the handling of certain dangerous materials, to wit, infectious diseases, only upon condition that he handles them in a manner conforming to law. The physician is no more at liberty to handle these diseases according to his own whim than is an engineer (a member of another class usually licensed), who has the privilege of bringing dynamite into a village, to make a bonfire of it in the public square.

If the physician could be brought to understand his true attitude toward the community I feel sure that the medical opposition to the registration of tuberculosis would soon disappear, and this I feel is one of the greatest and most important tasks of the health officer.

As regards the practical execution of a registration law I could necessarily have little to say to this audience. Most of you have had far more practical experience than I in the execution of general registration laws, and the registration of tuberculosis is not essentially different from the registration of other communicable diseases, nor do I believe that on the whole it is a more difficult problem. It will take in my opinion about five years to place the law for the registration of tuberculosis on a satisfactory basis in New York State. About two years of this time will be taken up in producing the proper mental attitude among the practitioners of medicine in New York toward what to them will be, at the start, a novel problem. After this has been accomplished, pressure must be brought with increasing strength until all the profession fall into line. We are now ready in Maryland after five years' operation of the law to bring the first prosecution.

After all, in the registration of tuberculosis we are meeting a public necessity with a public solidly behind us. With this at hand all other elements of the struggle are of minor importance.

THE CHAIRMAN — This question is one of particular interest here. The State of New York is attempting to put in force a new law for registration. Dr. Price says it will take five years. I do not feel that his estimate is quite correct there.

The paper is now open for discussion, and we will call on Dr. J. P. Wilson, of Poughkeepsie, N. Y.

DR. J. P. WILSON — Mr. Seymour says, "Come up here where everybody can hear you." There are many things the health officer is called upon to do, that he is not paid for; and I was not paid to fill this hall.

Dr. Price has gone over this subject from the time of Moses down to the present time, and so the remainder of the story is very short.

I assume we all agree that registration of tuberculosis is absolutely essential if we hope to combat the spread of this disease.

Efficient municipal measures directed against the spread of this or any other communicable disease presupposes that the attention of the physical or health officer should be directed to the location of the disease. The necessity of registration may be admitted, for to-day, in almost all of the civilized countries, provision is made for the registration of tuberculosis.

Now, granted that registration is essential, and we have this information in our hands, derived from reporting the cases, still our work is not finished.

It is not sufficient for us to sit in our offices and send three printed leaflets to the afflicted ones; nor is it sufficient to notify physicians that tuberculosis continues to be a reportable disease; nor is it sufficient for our local boards of health of the State to petition our legislators to interest themselves in bills that may be pending before the Legislature. All these measures are admirable and essential, and they have their place in a campaign; but their place is not in the front rank of the forces drawn up for the fight.

I spoke of our lawmakers. Do you know we are a peculiar people in that we relentlessly and continuously and unmercifully abuse our lawmakers, and yet we continually run to them if we desire their influence in passing some legislation that to us appears to be important.

But we may legislate and legislate until the crack of doom and accomplish but very little. What we need is education: education of the people and of a few of the physicians. In fact, I may say that the paramount needs of this campaign are funds and education, and not research and legislation. At the meeting in Syracuse Dr. Porter said you cannot change the customs of the people or inaugurate any great reform unless you have behind you a determined and intelligent people. That is what we need in this campaign most of all—a determined and intelligent people.

We may legislate and we may legislate until Gabriel sounds the reveille and, unless the people have a working and saving knowledge of tuberculosis, we accomplish but little. You say: What has all this to do with registration? Simply this, my friends: I want to point out the relative importance of registration and education. If the people understand the nature of tuberculosis then registration and all other executive measures will follow as naturally as night follows day. The importance of registration is apparent. It is impossible to successfully fight a concealed enemy. In order that these unfortunates may be benefited by modern methods, it is necessary to know where to locate the disease. Tuberculosis is a preventable disease. It is quite possible to fight it. We can send food and other necessities of life to those afflicted with tuberculosis, and after death we can renovate the quarters.

We have learned of the danger of Typhoid Mary; and Mary has been considered a menace to the community. Now, every concealed case of tuberculosis is likely to be just like Typhoid Mary. There should be some surveillance of these by the Board of Health.

In order to successfully combat the spread of this disease, it is necessary that compulsory notification shall apply to all open cases of the lungs and the larynx.

I presume cases are not reported for several reasons. One is, that certain physicians fear that the Board of Health, through its health officers, will encroach upon their domains. That is a feeble excuse, because these cases frequently drift from the first physician who sees them—you know that as well as I do—and it is less difficult to exercise a supervision over a case if we once have had the case reported to us. Then again, some physicians fail to report their cases because they are indifferent, there is a lack of harmony between them and this general tuberculosis propaganda. They need some of the education I spoke of.

Then again, some physicians think their whole idea in the practice of medicine is to consider the patient and his interests only—entirely forgetful of the public and its interest. This is all very well for those physicians who still practise medicine, who still treat their patients. But there is another class of physicians forging to the front, who are practising public and preventive medicine.

Now, my friends, after all has been said and done, the progress of the campaign against tuberculosis will be accurately indicated by the marks made by the rising tide of the sum total of the education of the people.

THE CHAIRMAN—Is there any further discussion on this paper?

DR.——— I think there is a good deal of ignorance among physicians relative to what is really demanded of them concerning this registration. Living in simply a town in the truly rural community, as I do myself, I do

not know what my duty is, and I am sure the law is not explicit in those things. I have recently heard that about eight miles from where I live there was a person afflicted with tuberculosis without a physician in attendance. What is my duty under such circumstances? May I drive there, drive over there eight miles, and examine and see if there is tuberculosis there, if there is no physician in attendance? Many of these things are practical questions, and we would like to know what we are expected to do under such circumstances?

THE CHAIRMAN — Mr. Kingsbury may say a few words on that.

MR. KINGSBURY — Fellow Health Officers, I feel like saying, but I do not know just what relation I bear to health officers, as I have but a general interest, the interest of a promoter of propaganda in this matter, but Dr. Goler said last night I was a promoter, so I appear in that role, as one who has had some hand at promoting this law under discussion, and one who has studied assiduously, and with much profit, the Maryland law in drafting this law.

We gathered together the laws from all States and all the sanitary codes in all the leading cities, and the legislation of foreign countries in the preparation of this law. I was greatly impressed with the splendid paper and the excellent discussion by Dr. Wilson. The discussion is what is needed to bring out the points of the law, and to impress upon everyone the real rub in this matter—that is, the education of the public, and getting the public back of the health officer in enforcing this law.

The registration itself is, we believe, of great value from the educational standpoint, and so that is the reason for endeavoring to get the Legislature to enact a law which may be and perhaps is somewhat Utopian.

The next thing is to follow cases up, and not simply take the advice of a layman as to what should be done, but to go to a physician and find out what should be done. Follow the cases into the home by a visiting nurse, and do something for them. Now, there are two things in that law I would like to call to your attention. One is the provision requiring the protection of the records as to which Dr. Price referred. If you will read that section carefully, you will note it says these records must be protected, but can be used in the discretion of the health officer, for the purpose of enforcing the provisions of that act.

Now, recently I had a discussion with a health officer who maintained he couldn't use those records for any purpose. If that is the case, he cuts off the relief of charitable officials and hospital officials in getting hold of the cases and getting them segregated. So, if you will read the law carefully, you will find that the health officer, while forbidden from giving undue publicity to the cases registered, can exercise his discretion in the use of those records. I do not think that has been made quite clear in the past.

Now, the other thing is, in answer to the question asked as to what power the health officer has: I think if you will read section 3 or 4—it was section 8 before the consolidation of the law—you will find the health officer is given almost unlimited power. Dr. Biggs was responsible for getting that into the law, and he said at the time that would give to the local health officers, as in the case of the health officers in New York City, almost unlimited power, for in New York City they can take them out of their homes and segregate them on North Brother Island in poor cases.

Where the case is not receiving proper care, and the members of the family are not receiving proper protection, it becomes the duty of the health officer, and it is his right to go into that house and enforce such measures for the protection of that family, as in his judgment are proper in the premises. And furthermore it specifies, whenever a case of tuberculosis comes to the attention of the health officer, if there is no physician attending the case, the health officer has the right to enter and carry out the precautions mentioned in

that section of the law. So, I think by careful examination of the law, you will consider that the health officer is given the power to do all that is necessary to carry out the procedures and the precautions in homes where there is tuberculosis.

Now, in regard to the educational side of this case: As promoters, it is not our desire to interfere with the work of health officers, but to co-operate with them and educate public opinion, and health officers in the cities where we have been will testify that is the work we have done. We create a public opinion which gives more respect for the health officer, and the most important arm up there of the government is the arm which deals with the health of the community and the lives of the people.

DR. ———— I have had occasion to visit a family reported to me as having tuberculosis. A member of this family felt they should not be encroached upon. She was sick and it was nobody's business but her own, and she did not see why the matter should be made public. I told her it was not made public; I came to see her, as the case had been reported to me, and it was my duty to come and counsel her, and not to meddle with her private affairs. She was an irritable woman, and I had great difficulty in soothing her irritation. She was unwilling to comply, but she finally consented to use the means which I had acquainted her with. She told me there was a family not far away from her that had tuberculosis, and asked me if I had visited them. I said, "No. Do you know they have tuberculosis?" She said she was not sure, but she thought they had as they were poorer in flesh than she was. At any rate, she became reconciled later to the requirements of her situation.

I think an embarrassing situation exists there, namely: That if the health officer, while he makes a record of the case must conceal that record, must avoid making that thing public, and has to report it—now whether that is publicity or not may be a question that the patient may bring up; and if it is made public he is subjected to prosecution for a misdemeanor.

Now, it may be that many health officers and boards of health may be at a loss to know how far the talking of these things and reporting of them subjects them as individuals to an action for violating the law and subjecting them to a fine of \$100.

I am at a loss to know in this case of this woman that I called upon; I did not see any record anywhere that I had the right to enter upon this family. The case had not been reported to me, and to-day, while this does not constitute an infringement of the law, that would not be safe for me to undertake. This case is in Kendall, Orleans county, of which I am the health officer.

THE CHAIRMAN — I think Mr. Kingsbury and I had better get our heads together and prepare a circular covering some of these matters. Something which the doctor can put in the hands of the patient, and not give the health officer all the blame for construing the law himself.

DR. ———— I believe in the suggestion of the committee, that someone should be appointed to look into the law and make timely recommendations. Many things in the law can be met with advantage. I know the health officer is in duty bound to enforce the law. But any municipality that does not give sufficient funds to enforce the law is in itself guilty of a misdemeanor. In Buffalo we had some difficulty—the board of aldermen would not give us the inspectors and the clerks necessary to see to the enforcement of the law. Finally, after several months we threatened to mandamus the board of aldermen to provide the means to enforce the law. They then gave us \$5,000 to enforce the law. We have lectures and circulars in four languages, and we see that the law is enforced. The only thing is: do not be afraid of enforcing the law. When you find a case of tuberculosis see that the patient does what the law demands. Do not hand him a circular and think you are through with him. If you cannot see him again, send an inspector or a district nurse there every two weeks, and see that he takes precautions not to infect the

members of his family and the neighbors around him. With this law we should know all the tubercular patients we have in the State of New York.

Our inspectors every day see the cases and they investigate the homes, and if the conditions are found to be insanitary, they make a report to us, and the inspector goes there and sees that the room is changed, or that ventilation is given, or we go to the workshop and see the managers and employers of the men and they are generally willing to co-operate with us.

Above all we must not be afraid to act. And in the course of time we will have a very good state of affairs indeed.

THE CHAIRMAN — The Conference will now adjourn until 2 p. m.

THURSDAY, NOVEMBER 11, 2 P. M.

FOURTH SESSION

SECTIONAL MEETINGS

Presiding, ALEC H. SEYMOUR.

THE CHAIRMAN — Gentlemen of the Conference, there was one paper on our program this morning which could not be taken up. It is by Prof. Ogden, and will treat of the Cornell Sanitary Laboratory.

THE CORNELL SANITARY LABORATORY

BY H. N. OGDEN, C.E.

Special Assistant Engineer, State Department of Health

I had this morning a carefully prepared paper, and what I hoped was a most eloquent speech in relation to the State Hygienic Laboratory at Cornell University. I had expected to speak anywhere from one-half an hour to one hour, describing in glowing colors the possibilities of that laboratory. But now when I am treading on the time assigned to other speakers, I am warned that I must be most brief, that I can only have a few minutes to tell you what we are trying to do in that laboratory.

I have traveled back and forth over this State for the Department of Health now for three or four years, and I am more and more impressed with the size of the State the more I travel. Whenever I have to go from Ithaca to Olean, Salamanca or Jamestown, or strike that local train that runs west from Hornell, I wish the State were compressed into one-half its size, and when I take the Delaware & Hudson train from Binghamton to Albany, I want to cut the State in two. The State is too big for a man that has to travel very much over it.

You, as health officers, who have had occasion to send samples of water to Albany, or specimens of sputum or blood, or any other object for analysis or determination, have also regretted the size of the State, owing to the time necessary to get results from that examination.

Only yesterday I was talking with a gentleman from a certain part of the State who had sent a sample of water to Albany, and

he told me he had been promised the result of that examination in two weeks, and with a shake of his head, he said "It is now four weeks, and I do not know how long it will be before I get the results of that examination."

But what can we expect with 8,000,000 people, 1,400 health officers, sending water to one station, and that station eight, ten or twelve hours distant from many of those places, by rail.

It seems to me the State should be divided into districts. It is foolish for men in Chautauqua and Cattaraugus counties to send to Albany to know whether a case of typhoid fever can be diagnosed as such, or whether water from a well in Dunkirk is polluted.

The basic principle of this laboratory work is the separation of the State into districts, wherein shall be one laboratory for the care of that particular district, and this is the beginning of that plan. The central portion of the State has been adjudged one district, from Oswego county on the east to Wayne county on the west; and from the north down through the State to Broome county, Tompkins, Tioga, Chemung and Steuben counties. Surely that is enough to maintain one laboratory. In that district there are ten cities and eighty-nine villages of over 500 people each, and I feel if we keep control of the water supply of that district, we shall have our hands full.

Through the co-operation of Cornell University and the State Department of Health, the laboratory was established this fall. It is now at work. Last night two samples came in and I put them on the ice as I had to come to Rochester. Our plan is to analyze the water supply of every one of these villages and cities once a month, and if any suspicious water is found, oftener than that. We will be able to tell the health officers immediately whether any water is open to suspicion. In the course of time we hope to send out supplies of anti-toxins, to have diagnoses made, to send out literature, and to have our medical experts there in case of epidemics. At present, we are limited to the analysis of water, and as I say, we must carry those analyses through the district once a month.

One other point: Being so near the villages, we want the health officers to become interested in the work of the laboratory. I

would like to put myself at the disposal of the health officers who would care to come to Ithaca, to see how the work is done, and to find out why the water is said by the chemist to be bad. We sometimes do not believe the chemist, but if we could see his process, and on what he bases his conclusions, we would have more respect for his conclusions. That is the laboratory we are starting, the Sanitary Laboratory of Cornell University, that is at the service of the health officers in that central district, limited by the counties which I have mentioned.

THE CHAIRMAN—The State has been very fortunate in securing the services of Dr. Howe as its chief medical expert. He is going to talk to you this afternoon on the "Prophylaxis of Communicable Diseases."

DR. WM. A. HOWE—Mr. Chairman and Health Officers, I feel more like getting down among you, on the same level with you of the floor, where I have been for twenty years. It seems to me, coming so recently from the ranks which you yourselves are gracing, that I would like to touch shoulders with each of you. I feel more like having a good hand-to-hand shake, a good heart-to-heart talk with the health officers of this State, than I do like presenting my carefully prepared paper.

Now, my one desire and ambition, as a member of the Department of Health, will be to meet so far as possible every health officer of the State of New York, and, wherever possible, to lend every personal and official assistance I can to assist them in adjusting their local differences, and to improve their service to the people they represent.

PROPHYLAXIS OF COMMUNICABLE DISEASES

BY WILLIAM A. HOWE, M.D.

Medical Expert, State Department of Health

A general consideration of the prevention of communicable diseases is far too comprehensive to admit of more than a brief consideration, in the time allotted to my disposal.

Before attempting even this, it might be well to first acquaint ourselves with a few statistical data which have a most significant relation to the question in hand.

By consulting the records of the vital statistics of the State Department of Health, we find that during the past ten years no less than 221,853 people have died from preventable diseases.

This means that during the past decade, 32,565 more people than to-day comprise this beautiful city of Rochester have lain down their lives from diseases which ought to be largely prevented.

It also means that unless we can succeed in materially reducing the mortality among these diseases during the next twenty years, nearly one-half million precious lives will pay the penalty of our failure.

It likewise means that with the present death rate unchecked for twenty-five years the State would lose from the same source, approximately, the equivalent of the combined population of the cities of Rochester and Buffalo.

Does not such a startling fatality among our people seem almost appalling? Does it not seem as if there ought to be some means by which this awful sacrifice of human life could be checked?

Does it not seem as if, with our increasing knowledge along bacteriological and hygienic lines, aided by public sentiment, we ought to be able to avert this impending calamity?

This condition prevails, not from any one cause, but from many. It prevails in spite of the well recognized fact that the State Department of Health, together with its efficient health officers throughout the State, are putting up a splendid fight against mighty odds.

To some it might look as if we were either unable to meet the situation, or indifferent as to its fatal consequences.

To the medical profession it might be a sad reminder that as yet there has never been a united effort among its members to stamp out these destructive diseases.

To the health officers it might furnish abundant justification for the adjustment of many petty local feelings which often impair the hygienic welfare of a community.

To our Governor and our legislators, who have been so kindly disposed to supply funds with which to guard the health of the people, it might be a further incentive to even more liberal financial encouragement. With the public, already so widely and wisely concerned in matters of health, it might well arouse a determination to take a more active part in this struggle for self-preservation.

Be this as it may, the barren fact remains, that death from preventable diseases is each year staring into the hopeful faces of over 22,000 helpless people in our State.

What is the remedy?

Are the people willing to see us, or are we as health officers and physicians going to be content to sit down and meekly view this gigantic funeral procession as it passes through our midst?

Are we going to acknowledge defeat by this grim conqueror even before the battle has scarcely begun?

Are we going to admit that the combined energies of the sanitary forces of the State, the medical profession of the State, and the people of this proud State, are helpless before the invasion of communicable diseases?

Such does not seem possible, nor should it be.

What we need and must have here is a union of forces, before whose combined energies these diseases could not long endure.

Were this accomplished, do you think it would take us long to suppress ophthalmia neonatorum, a disease apparently so easily prevented?

With this union army as it were, waging a war of extermination on disease, how long, under the leadership of our energetic Commissioner, would it take to revolutionize the vital

statistics of the State, and place us foremost in the nation, yet among nations, as preservers of health?

Indeed it would not be long, and who would rejoice more than we to lead in this fight, which can but preserve millions of precious lives to the State, save untold riches to her resources, and make us the benefactors of a grateful people.

Health officers of the State, brilliant possibilities lie before you. Your faithfulness in the past is ample assurance of your devotion to the future. With such devotion to duty, let us hope that each of you will, (1) cultivate a cordial relationship between himself and his associate physicians, thereby insuring to the State the complete and prompt report of all contagious and infectious diseases; (2) gain the confidence and support of the public, in the establishment and enforcement of all sanitary laws; (3) enlist the active co-operation of all educational institutions, e. g. the press, the churches, the schools, colleges, or universities, and social or literary bodies, in teaching the fundamental laws of health.

Keep Commissioner Porter well informed as to your local sanitary conditions, never forgetting that his one desire is to serve you and through you the people.

Let us further hope that neither you as health officers, nor we as members of the department, will ever lose an opportunity to widen our acquaintance, not only among ourselves, but among the physicians of the State.

This may perhaps impress some of you as being rather foreign to the subject under consideration, but in it and through it lies one of our greatest opportunities to achieve success in the prophylaxis of communicable diseases.

Much as we may regret to admit it, it is nevertheless a well-known fact, that as yet the medical profession has not been unanimous in its support of the sanitary officers of the State. This unfortunate condition can and should be entirely different.

We want to appeal to you, as an integral part of the department, to interest your fellow practitioners in this splendid work. Get them to attend these conferences with you, and to participate in their deliberations. Make them to feel that they too are a

part of us, and are welcome among us. That to them as well as to us will belong the final credit of success.

Get them to resolve with you, that however brilliant may seem the achievements of the past, they will pale into insignificance under the united forces of the future.

Abolition of the common drinking cup.—The common drinking cup, so long in use in our schools, our churches, our public buildings and institutions, our municipalities, our railroad cars, and elsewhere, is to my mind one of the most prolific sources of spreading certain communicable diseases, particularly tuberculosis. This relic of the age of infection can and should be abolished. You as health officers can do much to accomplish it, and it is plainly your duty to wage a war of extermination against this menace to public health.

The clinical thermometer, a source of danger.—Practically all of you are in general practice, and are the busy men of your locality.

In most instances you represent the most advanced thought, not only in modern sanitary science, but in the profession to which you belong. As general practitioners, as family physicians, or as health officers, I would like to ask:

How many of you as a routine practice use more than one clinical thermometer in your daily work? How many of you use more than two?

How many of you have ever used a thermometer in the mouth of a patient, which you would not put into your own?

How many of you have had a patient hand this instrument back, with a polite request that you again cleanse it?

Do we not as physicians owe as great care in this matter to our confiding patients as we exact for ourselves? Are we always faithful to this trust?

A few years ago, Dr. Conklin of Dansville, assisted by Professor Dodge of this city, conducted a series of experiments with thermometers cleansed by the methods ordinarily employed. The result of this investigation was subsequently given by Dr. Conklin before the Central New York Medical Society, and clearly showed that this indispensable instrument is liable to be a frequent carrier of germs.

Such is undoubtedly the case, and it would seem as if we might and ought to adopt some method by which we could eliminate this needless danger to the people intrusted to our care.

Let us all at least resolve that we will never again use this instrument with a patient, unless we would unhesitatingly use it on ourselves.

Anti-tuberculosis warfare.—Neither the history of medicine, nor the history of mankind, furnishes anything approaching a parallel to the present fight against this one disease.

Its battle field reaches from ocean to ocean, from sea to sea, from continent to continent, and from civilization to civilization.

Its opposing forces are the numberless billions of bacilli on the one side and an afflicted people on the other.

The struggle, which has been a most desperate one, shows no signs of an early abatement.

With one single patient expectorating each day more tubercle bacilli than the total population of a nation, is it to be wondered at that the odds are so overwhelmingly against us, or that our progress should be so slow, and often so discouraging?

But notwithstanding these seemingly insurmountable obstacles, the human race is destined to win in this fight for its very existence.

I verily believe that the time will surely come when we will control this great white plague as effectually as to-day we control smallpox, which in prevaccination days wrought such frightful havoc with the human race. To accomplish this end many things are absolutely essential.

Let me assure you that in my opinion the great physician of the future is destined to be he who prevents, rather than he who endeavors to cure, disease.

Let me again emphasize the one pervading thought of my remarks, that the prevention of disease is a far greater victory than to treat the same.

Viewed from the standpoint of the sanitarian, ladies and gentlemen, the future of preventive medicine is indeed most promising.

It is the most vital and practical of all health problems which are to-day sweeping like a tidal wave over the civilized world.

Its rapid growth and evolution is being augmented by many

of the brightest and ablest minds of the age. Like the fresh air of the heavens, it is God's means, placed at the disposal of the human race, and is but another of His wonderful blessings. It is but the corner-stone on which we must eventually build the superstructure of our sanitary laws.

As physicians, as teachers, as advanced thinkers, as custodians of health, as firm believers in its possibility of accomplishing wonderful things, we should welcome its coming, and spread its blessings.

Unless we can find some reliable means by which we can destroy the insidious bacillus outside the body, or render it inert after it gains admission to our system, we must continue to struggle against mighty odds.

With tuberculosis, more than with any other communicable disease, prevention means most to the ultimate success of its extermination.

Unless we can stop the multitudinous exposures which are occurring daily, we cannot hope to prevent the incipients, nor to find ourselves without the more advanced cases.

Let us therefore strive first to prevent, but failing in this let us learn to find our cases early and then, if possible, cure them.

Let us all unite in a common endeavor to locate and register every case of tuberculosis within the State.

Let us educate the people from childhood to manhood as to its dangers when carelessly handled, and inform them as to its comparative safety under proper management.

Let us advocate the location, throughout the State, of suitable sanatoria, in which cases of varying stages can be segregated, and receive the latest and best attention.

Let us favor such legislative measures as will best enable this work to be carried on most advantageously.

Let us advocate State or municipal inspection of our schools, our churches, our public and private institutions, our railroad cars, our factories, in fact all buildings in which many persons assemble, to ascertain whether or not conditions exist which may jeopardize the health of our people.

Ophthalmia neonatorum.—The long continuance of this need-less calamity among the children of our proud State should bring

a blush of shame to the faces of those who usher these helpless little ones into this world so full of sunshine and happiness.

No person with a human heart can see a child doomed to a life of darkness and be unmoved by the horror of the spectacle. Nor should any person, man or woman, who assumes the awful responsibility of the parturient chamber fail to realize that this awful calamity may some day be laid at his or her door. It is true that the vast majority of you have been fortunate thus far in escaping. Grateful indeed should you be, and yet let me pray that you may never relax in your painstaking care to the eyes of the infants which are intrusted to your safety. Fortunate yourselves in knowing how to prevent this needless affliction, you are the very ones to assist us to teach others, less fortunate and less successful, how they too may escape.

By this time there ought not to be a health officer in the State who is unfamiliar with the policy of the department for the suppression of this disease. The work is progressing very satisfactorily, and with your earnest co-operation we hope soon to be masters of the situation.

Thousands of supplies have already been mailed to the physicians of the State, and the demands for the same are daily increasing.

We want to ask your assistance in our endeavor to secure a card index of every physician and every midwife doing any accouchement work within our State. With this as a working basis we hope to follow closely the occurrence of every case of ophthalmia in the new-born, locate its cause, and if possible prevent its recurrence, in the hands of the same practitioner.

The mere instillation of a few drops of a one per cent. solution of nitrate of silver into the eyes of every new-born infant is a procedure so simple, yet so effective, as to commend its universal adoption by the profession.

More rigid enforcement of quarantine laws.—The fault here is not so much in the law as in its violation or lack of enforcement. In sanitary as well as in civic statutes, many a good law is no better than the poorest, simply because it is not complied with. It matters not how wisely these measures may be drawn,

they are practically valueless as preservers of health, unless we can execute their enforcement.

The law directs or commands that we shall quarantine scarlet fever, measles and whooping cough, and yet how many physicians are there in the State who are to-day absolutely indifferent to its mandates, in respect to one or more of these diseases. We can never hope to save the 3,365 young lives which are being sacrificed each year to these three diseases until we and the people learn to more fully appreciate their imminent danger, and to handle them accordingly. The time has come when we must abandon the ancestral fallacy that these so-called children diseases are harmless, and should, therefore, be had by our children while they are young. As a matter of fact statistics tell us that we lose each year far more from this source than from diphtheria itself.

Let us awaken to the situation, which you must admit is indeed a serious one.

Let us urge you to be vigilant and faithful in seeing that the quarantine laws as they pertain to all communicable diseases in your community be rigidly enforced, accomplishing which you will have taken an indispensable step in saving many thousands of lives otherwise doomed to an early death.

Typhoid fever.— During the past ten years our State has lost 16,091 of its subjects from this one source. Most of these have died in the prime of life, at the height of their earning capacity to the State, and of their greatest usefulness to their families.

In the suppression of this disease, whose ravages are each year costing our State so dearly, let us hope that you will vie with each other and through yourselves with the people, to assist the Commissioner in his determined fight against this destructive disease.

Bring to him every possible aid within your power to stop the pollution of our public waters, the accomplishment of which will do more than any other one thing to reduce the frequency of this malady.

Let him feel assured that you will wage an incessant warfare on the filthy fly, that you will guard assiduously the milk supply to your people, that you will favor legislation looking to the State

or Federal inspection of the sources of our shell fish, and that you will keep a vigil eye on all other possible sources of infection, never forgetting to employ the most drastic and effective means to destroy the typhoid germ as soon as possible after it leaves the body.

Diphtheria.— Since the introduction of *antitoxin* as a therapeutic measure in diphtheria, the deaths in our State, from this cause, have fallen from 6,448 to 2,468 per year. This brilliant result is so strikingly significant that it speaks more convincingly of the efficiency of this remedy than one could possibly write in words.

The most rapid decline in this death rate occurred between 1888 and 1898, since which time no such striking reduction has been accomplished.

To be sure the lowest point ever reached in the death rate in our State was touched in 1906. This was again closely approximated in 1908, but since 1898 the death curve has not shown the steady decline which one would naturally expect under the existing favorable conditions for the general employment of antitoxin.

There has never been a time when the State was more generous in its policy or more able to distribute to all needy and emergency cases so reliable an antitoxin as at the present, or during the greater part of the past ten years. We cannot believe that this failure to more rapidly reduce the death rate from this disease is attributable either to the inefficiency of the remedy, or to the inability of the medical profession to obtain it.

The frequent and positive tests to which our *antitoxins* are subjected leave no room to doubt their potency. Our liberal policy of distribution is certainly such as to furnish no excuse for being without them.

This continued high mortality, we believe, will not be found among those of you who are believers in the unquestionable efficacy of this remedy, but among those who either disbelieve in its virtues, or for other reasons refuse to employ it in their practice.

We hope, therefore, you will aid us in an endeavor to reach and convert these unbelievers. That while doing so you will exem-

plify your faith in the precepts of your teachings, by using this remedy of par excellence value, not only as a preventive measure, but in the early and energetic treatment of all cases of diphtheria coming under your observation.

Tetanus.—During the year 1908 we lost in this State 122 people from tetanus. This is far in excess of what it should be and will be if we can secure the general employment of the tetanus antitoxin supplied by the State. It is now generally admitted that in this remedy we have almost a certain means of immunizing an infected subject, from an outbreak of this frightful disease.

Its greatest efficacy is apparently as a prophylaxis, as which we urge its general administration.

Commissioner Porter is anxious that all health officers of the State should watch carefully their supply of both diphtheria and tetanus antitoxin. Make certain that you have a liberal amount of each on hand and that it is not too old for distribution.

He is also desirous that the several hospitals in your localities should be supplied, through you, with a reasonable amount of both these antitoxins for emergency use. With these remedies in your hands, and at the immediate command of the hospitals of the State, we feel justified in predicting even more gratifying results than we have ever enjoyed in the past.

THE CHAIRMAN — We would like to hear from the gentlemen indicated on the program for discussion of this paper.

DR. D. S. ALLEN — It is related at one time when the Duke of York called on the celebrated Dr. Abnerthy, the doctor after hearing his complaints gave the following advice: "Cut off the supplies as the Duke of Wellington did in his campaigns and the enemy will leave the citadel." This statement is an axiom. When this remark is applied to communicable or germ diseases, the question to be solved is how to cut off the supply. Until recently little or nothing has been done for the protection of the school children, children between the ages of six and sixteen. Much has been accomplished for the protection of the babies, but almost nothing for the protection of those of school age in our common district schools. While we compel the attendance, we have done little to safeguard their health.

A leaflet issued by the State Department of Health, entitled "The Teacher and Communicable Diseases" (a copy of which should be in the hands of every teacher), very justly says: "The State provides education and it is by law compulsory, it is therefore the duty of the health and educational authorities to see that the scholar suffers no impairment of health in consequence of school attendance."

In the high schools of our villages and cities there has been a more or less systematic effort made to enforce and teach some sanitary and hygienic laws. Good results have followed in controlling many communicable diseases by preventing the dissemination of infectious germs, but we ought and must pay more attention to the country school children, compelled as they are to occupy certain rooms and surrounded by environments largely of our making. It is

our duty to see that they are educated in sanitary and hygienic laws, warning them of the dangers from various sources of infections from communicable diseases. In the first place we should make it a part of our duty to see that the schoolroom is kept in as sanitary condition as possible. Hygiene should be taught and enforced by the teacher, and in many cases the teacher should be instructed by the health officer. I do not think the best results can be obtained by the use of text-books. Place in the hands of the teacher the leaflet referred to and supplement it by judicious advice and an occasional five minutes talk, either by the health officer or by some one adapted to the work, to be agreed upon by the teacher and himself.

In nearly all these schools you will find the water for drinking in a pail, not infrequently uncovered, usually a cup with a short handle, and every time the cup is used the fingers come in contact with the water in the pail, the drippings from the outside of the cup fall in the water, thus subjecting it to or at least giving it a chance to pollute the whole body of the water to be drank by the other scholars. This can be remedied to a certain extent by using a dipper with a sufficiently long handle, so that the cup need not usually come in contact with the hand and the fingers cannot touch the water. A better way is to have a fountain from which the water can be drawn through a faucet.

We have cautioned them against swapping chewing gum, giving a bite from an apple, putting pencils or penholders in the mouth, etc., but is there less danger in using a common cup for drinking purposes? Who of us has not seen an epidemic of sore throat, grip or an influenza of some sort attack nearly or all the school with more or less severity? Is it not probable that it is communicated from one to the other by the use of the common cup? This can be avoided with very little expense to the taxpayers by the use of the fountain and individual cup. I would have each district furnish both the fountain and cup so they would be uniform and no strife or jealousies exist as to who has the best or more expensive cup.

It would be wise to have the water from the well that supplies the school examined at least once each year, at the commencement of the term, both for the purpose of protecting the users of it and for the moral influence in showing that you really have an interest in the health of the pupils.

I would also abolish the common towel as a source of infection, have each scholar bring and use his own. In most of these schools a large proportion carry their noon-day lunch, and usually have a napkin or towel in each box.

Then the child should be instructed in the use of the handkerchief. The teacher should not allow them to cough or sneeze unless the mouth and nose is protected by some sort of a handkerchief to keep the germs from infecting the air of the room.

Spitting on the floor has been almost entirely suppressed, and it would be just as easy to induce the habit of protecting others from coughing or sneezing. You gain by doing this both by teaching the child and forming a habit that will last through life, and the example will be followed by the parents and other members of the family. The average child is a tyrant, and will demand of the parents and other members of the family the precautions they have been taught as healthful and cleanly.

I believe these simple and inexpensive changes can be easily accomplished in our rural schools and thus form a nucleus for better sanitary habits that will cut off the supply to a certain extent of infectious germs.

Now don't go too fast in changing the old order. I find that by talking to a school and suggesting certain changes toward sanitary cleanliness, they very soon fall in line and are ready to adopt, in fact suggest other ideas in this line. You will thus sow the seeds of cleanliness, and after all the whole law of hygiene and sanitation is included in having a clean body, clean habits and a clean life.

DR. E. W. SEVERES — Sanitation interests all of us, and so does prophylaxis; and it seems to me that if some idea can be given of just what is at our very doors, that should be corrected, to prevent the spread of disease, that idea should be entertained, discussed and elaborated. He has as his aid and support, the best medical department in the State. We have learned of the

"inefficiency of the health officer," and the "ignorance of the medical man with regard to health matters," from one of the speakers this forenoon. But we point to our local boards to account for the health officers' inefficiency. First, he may be a coward. That would account for his inefficiency. Second, he has the silent opposition of his confreres. He goes on to do something, and the doctor will not aid him. He goes by this cesspool, sloppail, and so forth, and he never reports it. It breeds flies and the filth is dragged into the houses and into the rugs that have not been cleaned maybe for a year.

Then these doctors do not report to us one-half the cases they know of for fear some other fellow will get their patients. Further than that they do not report to us suspected cases, and especially do I refer to tuberculosis. We have knowledge which would be of special benefit to the patient if the cases were reported. I do not wish to make a speech, but I wish to bring out the idea that there is something which we each should give attention to in our several localities.

We have heard of the contamination of the waters of the State by the sewage. Very true. But perhaps we are fortunate in the fact that there is not enough water drank in New York State to cause anything in the way of disease. The chief source of trouble is the milk supply. I come from the greatest dairy county in the State—St. Lawrence. Hundreds of thousands of gallons come from there. But in other counties we find trouble is traced to the milk supply. The milk supply is the chief source of communicable disease, and if we are to exercise prophylaxis we must look to it. The milk bottle—your milkman comes to the milk depot and is loaded down with the daily supply, and he has say four hundred families to supply and one hundred bottles which he uses in supplying them. He leaves a bottle over at your house, and in exchange he gets an empty one. In your house is a case of communicable disease. The baby is ill. The mother is the nurse, cook, tablemaid and chambermaid. She washes that bottle in luke-warm water, dries it as well as she can on her apron, and the baby is given it to play with, and when the milkman comes, he takes it after she has wiped it with her apron, and he fills it and delivers it to the next customer.

DR. GEORGE STRASENBERG—I think what I have to say is brief and important. It is in behalf of the practising physician. He is reproached very much, and if the conditions were better understood, perhaps they might be more appreciated.

I am from Orleans county, and I will relate to you some circumstances which the practising physician has to come in contact with. A little help from the department will certainly help the health officers. I was notified of a case of typhoid fever. I went in and saw the man, looked at the surroundings, and saw that the conditions were quite sanitary. I told the lady in whose family one member had typhoid fever that it was necessary for me to call in the officials and clean the house. She railed against me with the utmost of her strength, and threatened me with the law, and said she knew the town would have to bear the expense, but she said, "If I put such an onus of that kind on her house"—she said, "How did you know I had typhoid?" I said, "The physician informed us. She railed against the physician then, and intimated that she would not have anything to do with him again. I had quite a time with her to allay her passion. I told her it was my duty to come and inspect her house and the outhouses. She said she would send the patient away to such and such a place. I said, "It is no difference. It is necessary that you should keep this place in such and such a condition." Now she berated this physician.

Now, Mr. Chairman, this physician has prepared himself for his profession, and it has cost him money, and he finds that this family and the other families are rising against him because he does his duty. There is a possibility that he might refrain from promptly notifying us when such things exist.

The case of tuberculosis which I referred to this morning, I failed to state in that—but this lady who is so afflicted is an educated woman and the doctor in our city, and she is as full of fire as a volcano, and you may imagine that with her fire she has determination, and I felt I could not threaten her with

anything. I talked with the sister of this woman the other day, and asked her if she had used the articles which I had furnished. She said: "Yes, but she does it very reluctantly, but some things she said she wanted." She said, "What shall I do?" I said, "I do not know." She said to me, as I furnished her with documents, "Perhaps all you could do would be to bring her before a justice of the peace and fine her. She has money."

I tried to persuade her, for her own sake, that all these requirements were but to advance the interests of the person who was sick.

Now, if the department gets more money from the the next Legislature and they will publish or print a little pamphlet, stating all the diseases that are communicable, and the precautions which should be taken in each, I will undertake to send a copy of it to every family in town and it will help them to know when the physician comes to attend them, that he is not trespassing upon their rights and privileges. This man said, "I will never call that man again; never, to attend me or anybody in my family." But you can put yourself in the position of these physicians; these men have their families, and it would be helpful to those men to be relieved of this responsibility; and as I say, I would undertake to distribute among that municipality a copy of such a pamphlet, and it should be done. I am sure the department will receive statistics in greater numbers than it does now. It will protect the man that goes to a typhoid or tuberculosis case.

THE CHAIRMAN — Doctor, I feel that the Conference owes you a vote of thanks for having awakened them to this point of enthusiasm.

The city officers will now meet in the room off to the right. We would like all those interested in the city health departments to go over into the hall to the right, where is what is known as Section A of the program of the afternoon.

SECTION A—CITY HEALTH OFFICERS

Presiding: DR. D. M. TOTMAN of Syracuse.

DR. TOTMAN—I have been requested to act by the Chair during this session, and we will proceed directly to business. I will ask Dr. Goler to assist me in the matter. As I am first on the program to present a paper—I will ask him to take charge of the discussion which follows the paper.

THE WORK OF THE CITY HEALTH DEPARTMENT

By D. M. TOTMAN, M.D.,

Health Officer, Syracuse

This subject furnishes so much material for discussion that the time allotted is hardly sufficient to cover the entire field. It is, therefore, my purpose to speak only of the more urgent problems connected with the Department of Public Health of our cities. Many of these problems are of such a nature that there is a constant and increasing popular demand for their solution.

UNPOPULARITY OF PUBLIC HEALTH WORK

The first proposition which presents itself for consideration is that the work of the Department of Health is in any given municipality always unpopular for the reason that individuals, as such, are compelled to do something against their will. The public, as a whole, are not interested, and only become so when public opinion has been centered in some direct and positive manner upon a particular subject. While the health laws are always enforced for the public good, the department deals with individuals, and each case is separate and distinct in itself. The work is, therefore, ever varying, there being seldom two similar cases to deal with. In the case of the Police Department, guilty persons are cared for, also those persons supposed guilty; while the Health Department has to contend with innocent people, who feel that someone is trying to deprive them of their personal rights and liberty. Intercepting sewers, the reduction of garbage, construction of slaughter-houses, rendering establishments, etc., are all measures which do not directly interest the public. Im-

provements and benefits of this type are paid for by general taxation, so that excepting the newspaper item, the matter is soon forgotten and creates but little or no interest. Most of these things do not appeal to the public mind in the same manner as the purchase of playgrounds, sufficient city water, numerous electric lights, gas and pavements in the streets. In fact, everything pertaining to health is generally lost sight of by the public. The only knowledge many people have that the Department of Health exists is when disease and death visit their homes or their neighborhood. It is a trying ordeal when a member of the department visits the home where conditions are insanitary, or the family is stricken with contagious disease, and compels them to clean up and protect the public from possible sickness and death. The family always has the sympathy of the neighborhood, which considers them heroes, especially if they defy order and law, and often they can be brought to their senses only by arrest or a similar affliction in their own family. The department has scarcely any opportunity to see the bright side of life in all this work. Poverty, filth, disease, death and sorrow are the things we have to deal with. This, with the various neighborhood quarrels, make the daily life of the Health Department corps one of misery and trouble. Is there a remedy for this condition of affairs or shall it be ignored? The thing which seems to me most feasible is to patiently carry on a campaign of education which shall reach all of the people all of the time. Publicity, in my judgment, can be made one of the most powerful factors.

Our people are readers and many are intelligent thinkers; so that through the newspapers and magazines the field is widely open for educational work. The training of our children, who are to be our future citizens, in the elements of hygiene with proper ideas of cleanliness, the danger of contagious disease, and the method of the spread of such disease should not longer be neglected.

One time when I was talking to a committee of the Breeders' Association, speaking about farmers in their care of the milk supply, I made the statement that when a man had reached the age of forty years I considered that if he was a man who knew nothing about cleanliness on his farm it was an absolutely hope-

less matter to train or get anything out of that man. And that is true. It stirred up those men. They were pretty nearly ready to fight me. I said it and I meant it, and I mean it now — that after a person reaches the age of forty years, that man is hopeless. You cannot educate him in cleanliness. So I wish to emphasize this last statement because away in the future I see great things coming. *“The training of our children, who are to be our future citizens, in the elements of hygiene, with proper ideas of cleanliness, the danger of contagious diseases and the method of the spread of such diseases, should not longer be neglected.”*

ELIMINATION OF POLITICS

My next proposition is the elimination of politics. This is a delicate subject as I am aware, and must be handled with care. The most essential thing in a successful administration of any and all health work is the appointment of efficient, capable and interested heads of the various departments. These men should always be chosen upon their fitness for their work, and once chosen and having demonstrated their ability to do the work, they should not be disturbed under any circumstances. In some of the work it takes years to fully develop and train a man, and none is more capable to select such men than the health officer himself. It is a rare gift and difficult of acquirement to know men and make the proper selection for the important positions in a Health Department. The services rendered by the employees of the Health Department, to say the least, are of as much importance as are those of the Police Department; and they are exposed to dangers as they come into contact with contagious diseases and insanitary surroundings. I think that there should be a careful examination by competent authority, preferably by the State Board of Health, to determine the qualifications of appointees, who are to carry out the work of a city health department. In my opinion, the Health Department employees should be upon the same basis as those of the police and fire departments, and I would further recommend that a system of pensions should be adopted. I know of nothing that would increase the efficiency of the men connected with the health work more than the prospects of a pension for efficient and faithful work after years of service. If

these things could be carried out, the salaries would be made adequate, and if the system was graded, the salaries might depend upon the length of service.

CONTAGIOUS DISEASES

The ever-present problem of controlling contagious diseases presents great difficulties. Probably the disease that requires more labor and more constant thought than any other is the control of scarlet fever. It has been apparent, time and again, that if this disease is checked and apparently stamped out, yet it will break out again and is liable at any time to assume serious proportions. While we do not know the specific cause of this disease, yet we do know that it is highly contagious, and can easily spread over an entire city. This brings up the question as to the best method of fumigation and disinfection. To anyone who has given the subject careful consideration, it must be acknowledged that the systems now employed are more or less defective. I know that there are men who claim that they have solved the whole question, but personally I differ with them. The problem is certainly a very difficult one. The first necessity is a municipal sterilizing plant where the household bedding, draperies, carpets, upholstered furniture, and everything that can conceal and harbor disease germs can be sterilized under the supervision of the department.

This method should be employed especially with the contents of rummage sales and with all second-hand furniture. We now know for a certainty that the disease germs of both scarlet fever and diphtheria, when in a dry state, will remain virulent for a long time. If anyone has observed how children suffering with either scarlet fever or diphtheria are allowed to play in rooms furnished with upholstered furniture they can easily understand how difficult it would be to make such furniture safe. Months afterward neighborhood children, playing upon such furniture, have contracted the disease and then it is a seven days' wonder how it all happened.

CITY HOSPITAL FOR CONTAGIOUS DISEASES

It is my firm belief that the time is not far distant when practically all cases of scarlet fever and diphtheria will be taken care

of in an efficient and thoroughly equipped contagious disease city hospital. I would go further. I would include in this list measles and whooping cough. In the city of Syracuse we now take all cases of scarlet fever and diphtheria, where they cannot be properly cared for at home, or where quarantine is not strictly kept, to the city hospital. In our contagious disease hospital for the city of Syracuse during the year 1908, there were 162 cases of diphtheria cared for with 3 deaths; while in the city at large 259 cases were cared for in their homes with 22 deaths. The city hospital has everything to commend it. It is humane and is economical. For the saving of life is always a commercial asset in any community. There is nothing more expensive in a family than the care of contagious diseases and the most expensive part of it is the fees to be paid to the undertaker.

DISPOSITION OF SEWAGE AND WASTE

The next subject for consideration is the elimination of and disposal of the waste of the city. Probably the city of Syracuse has had a more difficult problem for solution in its sewage than any other city in the State of New York. About a year ago in the presentation of certain facts in reference to the city's sewage and drainage in connection with the construction of the barge canal before the Advisory Board of Canal Engineers, one of the members of that body personally upbraided me for the conditions I recited at that time. I told him in very plain language that the city of Syracuse was like "Topsy" it had just growed and that its parentage could be wholly attributed to the location of the Erie canal and the New York Central railroad. A city, like an individual, is not to be criticised for its existence. Originally the sewage of the city was almost a haphazard matter. It was built according to certain local conditions and necessities and so it grew up without a fixed general system of sewage. It is only in the last fifteen years that a general system has been adopted. That plan is now being worked out at nearly a half a million of dollars cost. Heretofore all the sewage of the city has emptied into Onondaga creek, a small stream which in a dry season is exceedingly small; hence it enters Onondaga lake which lies in and adjacent to our city. From the lake the drainage is into

the Seneca and Oswego rivers into Lake Ontario. The work is now under way to build an intercepting sewer, which shall enter a disposal plant near to the lake. The problem which faces the city, in my opinion the most urgent one, is the opening up of adjacent suburban properties for residence sections. Two or three of these sections have but recently been admitted to the city. Practically all of the people in these sections have common outside privies, cesspools, and are wholly dependent upon wells for their water supply. It will take years to remove the injurious effects of all these conditions. The point which I wish to bring out is how can it be brought about that all sections which are to be occupied by residences shall be first properly sewered and supplied with city water? At the present time the method of obtaining sewers is by petition through the local alderman to the common council; and they can accept or reject. It so happens that in a given locality a certain number of people are opposed to the assessment which follows the building of a sewer — they can defeat a candidate for the office of alderman. It appears to me that it would be perfectly proper and expedient to put this whole matter in the hands of the health officer with power, and laws ought to be enacted to that effect. There are certain inalienable rights. One of these is that house and home owners are entitled to a healthy and clean place on which to locate their habitation. And the soil under our houses should be free from all sources of contamination. Another inalienable right is that every inhabitant is entitled to pure, uncontaminated air. In my opinion the future existence of the human race depends upon keeping the atmosphere free from injurious substances, such as smoke, dangerous and poisonous gases, and from dust, which can be easily introduced into the air; and one of the great problems in the safe-guarding of the public health in our cities turns upon this latter point. If we can solve the dust problem, the most important step in the control of tuberculosis will have been taken.

In the city of Syracuse the greater part of the garbage is collected and taken care of at a reduction plant. With careful handling this will probably solve the care of what is known as green garbage. The other refuse or waste including ashes, papers and

other waste material from the houses is disposed of in various low-lying dumping places. These refuse dumps are visited daily by hundreds of people, gathering up the papers and every conceivable thing which they can find. It is easy to understand that this is a possible source of some of our contagious diseases. This refuse is often gathered by little children and taken to their homes, and there sorted over by these same and other children; thence taken to the junk dealer, and again sorted over; from thence it is sent to various manufacturing plants to again expose a large number of people. The thing seems to be unending in its possibilities.

RELATION OF MUNICIPAL AND STATE HEALTH AUTHORITIES

I believe that the relation of the municipal and State health authorities is a question worthy of consideration, yet I hesitate to touch upon this subject, because I believe that there is little, if any, ground for complaint at the present time. In this same connection the relation of the general medical profession to the Health Department work is deserving of serious consideration. The efficiency of the Health Department is largely dependent upon the earnest and willing co-operation of medical men. Likewise the success of the municipal and State departments is correlative, for the success of one determines to a large extent the success of the other. There is undoubtedly more or less ground for improvement and for the insuring of more cordial relations, and it is certainly true that the present tendency on all sides is for the encouragement of these relations which are in fact nothing but mutual interests.

In conclusion, let me say that no municipal health department will reach its highest efficiency without meeting and answering some of these problems which have been presented.

DR. GOLER — I have been asked to take the Chair during the discussion of Dr. Totman's valuable paper. While there was no applause during the reading of the paper, I feel that we all of us in our hearts applauded most of the things — if not all — that he had to say.

Once upon a time, in the city of Grand Rapids, I listened to a discussion which was limited to five minutes *and to the question*, and when one speaker sat down there were two or three other people ready to speak at the same time. I trust that you will not all speak at the same time, but the discussion of the subject will be limited and the ladies and gentlemen are asked to speak directly to the question or the Chairman will interrupt them. Now Dr. Totman's subject is open for discussion.

DR. WALTER A. COWELL, Olean — First, I want to thank Dr. Totman for his paper, for the earnestness which he has shown to us and the excellency of his talk. There are a few things which I will mention, namely: I think all our efforts will be in vain, largely, unless we have the public educated to appreciate the efforts we are making for their benefit. And education should begin with the child. We should train our children as much as we can in their habits about the home, not allow them to use handkerchiefs, towels, or washcloths that others have used. Be particular about these things they have to deal with, and inculcate into their minds an idea of sanitary things when they are growing up — not leave it to the State boards. Let the fathers and mothers train the children in proper sanitary principles as they are growing up.

The question of sewage disposal. Our city is a small one — only about 20,000. So many things I would say if I had the time, but that wouldn't be in harmony with what Dr. Totman has said. We have two septic tanks in the city doing very fine work. Part of the city is without tanks, but with the old sewer system which empties into the Allegany river. Our garbage disposal — we have a plant of which we can feel justly proud. One which ranks among the first. We have a system — a can is left at the house once a week 26 inches deep, 14 inches in diameter. That is thoroughly sterilized before being left there and left there a week and the housewife puts her garbage into it. No bottles or paper. In a week's time the garbage collector comes and puts in the place of that can a new can which has been sterilized, and removes the other can to his wagon, without taking the cover off, and takes it to be disposed of outside the city limits. The can is scrubbed with hot water and revolving brush, and then put back on the wagon to be taken out next morning. Cans are never opened in city limits. The charge is ten cents per week to those served. I feel in that way we have a good system. The garbage is treated chemically and we get soap grease, which is sent to the soap factories, and phosphate is made of the rest, which is the residue after the extraction of the grease. Papers are collected in separate wagons, bundled and sent to manufacturers. In that way we have a pretty good disposal for our garbage. The question of sterilization. We do not have a city plant for carpets and furniture. We do recommend in connection with our circulars that the mattress be burned and all furniture, carpets, portieres, etc., in the room be thoroughly aired at least twelve hours in the sunshine. We do not demand that, but we always send printed suggestions with our man who fumigates. These are left with the families. We feel we would like to have our sterilization plant, but at present we must do without it.

DR. C. D. MCCARTHY, Geneva — I wish to ask the physician whether that collection of garbage was collected by the city or by a private corporation.

Answer — Private corporation. Guarantee to take it away once a week.

DR. E. H. CODDING — The garbage is treated chemically and they get the fat and phosphates. I would like to know something of the process — whether by heat?

Answer — I am not certain just the method, but the fat is extracted and leaves a dry, pulpy residue after extracting the fat, which is pressed into cakes and sent out as phosphate. I have it from the manager of the concern that it is a chemical process.

DR. GOLER — That is a general, well-known manner of extraction. May be seen in Rochester.

DR. C. D. MCCARTHY — One thing it seems to me, brought up on this other paper, about the establishing of quarantine. It seems to me that that has run wild. The idea of quarantining for typhoid fever! It is quarantine run wild. Contagious diseases removed from the house by force! I expect that Dr. Totman means in those cases where they are not properly taken care of at their own homes, and that you do not advise taking each and every case of scarlet fever from the home and putting it in a hospital.

DR. TOTMAN — Well, I think I do, Doctor, generally.

DR. MCCARTHY—Then you must know that that hospital is in pretty good shape. The point of that is this: That I do not think they should be taken from their home by force and put into a contagious disease hospital, Mr. Speaker, unless they would put their own wife or child in there. If it is good enough for that, all right. If not, they should not insist upon doing it. If it were my wife or child they would not do it. If the city will supply such a place as that, all right. If they do not supply such places as that, it is all wrong, and it is the health officer's business to see that such a place as that is supplied or else not use the force. Why they should remove some of these cases I do not understand. Why we should have so much of this "fumigation" I do not understand. It is news to me why the family, where this contagious disease exists, is not visited by the health board or some person connected with it, and taught what to do in that particular case. Those upholstered chairs removed, portieres removed, those lace curtains removed from the room, the carpet removed from the room. Then the patient told not to spit on the sheets or the floor. There is where your contagiousness comes. It is from the filth. Hygiene is cleanliness or prevention. Now you cannot prevent contagious diseases unless they are clean about it. You cannot prevent them with measles if they are spitting on the floor, or spitting on some article of clothing. You cannot do it. It is simply cleanliness. The idea of a central plant for these things I do not know about, in a city like Syracuse, Rochester, Albany or New York, but it seems to me that in the removal of these things from the house where the contagious disease is to this central plant there is danger of communicating the disease. It seems to me so—I don't know; but I think there is less need of infection if there is plenty of fresh air in that room and the people are taught to be clean with it, the same as with consumption. If the expectoration—the spit, the good old Anglo-Saxon word—is taken care of there is not much danger of your consumption. Isn't that right? And it is so with the rest of the contagious diseases—every one of them—just the same way.

There is another thing I notice in passing through some of our cities—I won't mention any names—that the cities are not clean. Your alleys are not clean. There is a lot of refuse and, in the rainy weather, a lot of standing water in your alleys. I will not mention any names, but I can take you to places where, if the people can live in those places in the city, they can live anywhere. I do not know what the boards of health are doing to allow such places to exist. You say that you have to have places for your poor people. If you *will*, let them be *clean* places. Make the street department clean up your alleys.

DR. RALPH ROBINSON, Lackawanna.—I have been very much interested in this paper of Dr. Totman's and also in the speeches of the two gentlemen who have just finished. One point that came to my mind, as Dr. Totman spoke, was this, more especially in the smaller cities perhaps, to have a good board of health—one that will stand behind the health officer and whatever he does. In the city which I represent we have a health board which is composed of physicians only. I think that is an almost unheard of thing. As you, perhaps most of you, know, the city of Lackawanna was just incorporated this last summer. There has been really no health board there. It is a place which has grown up very quickly and has been under the town government, and the board of health of this town has taken very little interest in the sanitary conditions. At the present time the board of health is doing all in its power to make Lackawanna a clean and healthful city, but it has a great many difficulties and difficult problems to encounter. As Dr. Totman said, I believe that education is the vital point that has got to be reached. Each one of the school children ought to be given some instruction, I believe, along the lines of healthfulness. I was interested to hear what Dr. Totman had to say about the cases of scarlet fever, and how in Syracuse, where there are cases where they are positive that they cannot keep a proper quarantine, they take the cases to the city hospital. The last month or two I have run across two or three cases where I was positive that such quarantine could not be kept. If I may illustrate: One case was in the house of a Polish

midwife. This midwife has been licensed to practice midwifery in the county of Erie. She had a case of scarlet fever in her house and yet wanted to go to work and take care of confinement cases. One afternoon, about ten days after she had been placed under quarantine, I happened into a house and found her taking care of a woman who had been confined but a very short time before. I ordered her to go home and at the same time placed a policeman in front of her door. The next morning I heard from them. They called me up over the 'phone and wanted to know what I had locked their house up for. Of course, I did not know that their house had been locked, and then her small boy in broken English said: "Well, you locked our house." I said: "Not that I know of." "Well, you put a policeman in front of our door. You know what that means. You know what you are—one crazy fool." So I run across a number of other cases very similar, and we have a very large population of foreigners there to deal with, and so, in such cases, I think it is all right and proper that they should be taken to the hospital.

DR. F. E. FRONCZAK, Buffalo — One or two things I want to take up. First thing, I believe the health officer should be out of politics—the position of the health officer should not depend on whether the mayor is Democrat or Republican, but a question of how much he knows about sanitary science and enforces the law in relation to sanitation.

I also believe the men who work in the health department should be out of politics. In the health department of Buffalo, in our health department of 100 men, I know about three men—I do not care what they are as long as they do their work. These men are under civil service and are taken always from the top. Number 1 always on top, and number 2 not taken if Number 1 wants the position.

The second thing that the health officer of the town should have should be courage. A coward has no business in the health department. When he knows something is wrong he should simply see that the wrong is corrected and that the law is enforced. It is true that real often, under present conditions, the health officer must depend upon the good favor and the friendship of his medical confreres, because they will try to get his position—they will try to do him sometime and squeeze the health officer at the earliest opportunity. But if the thing is out of politics, if the man has courage, if he enforces the law, and if he treats the medical men fairly he certainly shall make them his friends. There is no doubt that much could be done to improve the conditions at present prevailing in the various cities. There is no doubt that quarantine could be enforced better. In many cities, I understand, they quarantine almost everything. Some villages have quarantine for measles—placard a house for measles. As a matter of fact I am not a great believer in placarding a house. I believe it is an invitation to all the neighbors to come in and see who is sick. I believe in putting the people on their honor. If it is a case of communicable disease keep the case isolated, and if you do not, we will simply take the case from the house and put it in the hospital.

The question of milk is a very serious proposition. In the near future, I am quite certain, we shall have the so-called "single service packages." Single service packages consist of packages covered with paraffine used once and not for anything else after that. The question of cost seems to be entirely the same, whether paraffine or the glass bottle, counting the broken glass bottles, the cleaning of the bottles, with the sterilizing of them, and with the number of losses. I believe the single service package will be in the near future in general use.

I also believe what Dr. Schurman said this morning, that there should be a special school for sanitary officers. I believe this State should insist that a physician, who becomes a health officer of a city, should know something more about sanitation than merely the articles which he finds in the city charter and the books and rules and regulations of the city. He should know something more than that. A school of that kind, no doubt, will be of great advantage to sanitary officers of the State.

DR. F. A. WATERS, Lockport—You all heard the doctor from Olean make the statement about the teacher in the public schools who had consumption, and reporting the case to the board of education in that town. In Lockport we have a similar case—a bell-boy in a hotel has a case of consumption in the first stages. I would like to ask what shall we do with these two cases? Shall we allow them to continue their work, or what?

DR. GOLER—That may be covered in the closing discussion if Dr. Totman wishes. It hardly seems as if some of the salient features have been covered in this discussion.

DR. JOHN EDWARDS, Gloversville—I wish to say a word relative to the contagion of communicable diseases. I think the pamphlet issued by the State Department of Health in which the teachers are instructed relative to communicable diseases is a greater factor than anything else for the prevention of these diseases. I believe that they give there that instruction—all they need—relative to scarlet fever, measles, whooping cough and kindred diseases, and which will be a great factor in the prevention of these diseases. Relative to scarlet fever, I would say that the patient ought to be isolated completely. We could have no hospital in our city and, of course, my procedure is to put a guard over the house: that is, a policeman who is not to allow anyone to go in or out of it, and placard the house "Contagious Disease." We are in the same boat with Syracuse as relates to the disposal plant. We are about to erect one. I think that the proper way to have such a thing conducted is under the State Department of Health, under their jurisdiction.

DR. H. H. CRUM, Ithaca—In regard to placarding houses I feel that it is entirely proper to quarantine a contagious disease, at least in my city, for I find that is the only way I can hold quarantine. We do not at present quarantine measles, but scarlet fever and diphtheria we do. I placard the house, although the card does not say what disease it is. If quarantine is broken the neighbors telephone me and help me. I have no inspector to follow up these cases, and the only way that I can be sure that the quarantine is held is to depend upon the kind public who are very careful to let me know if anyone doesn't walk the straight and narrow path. I have had a number of people arrested, some fined, and some stayed in jail over night, and I would never have known a thing about it had not the house been placarded.

DR. TOTMAN—There is very little that I will take up your time with, except the matter about the removal of patients to the city hospital. My paper presupposes absolutely that the city hospital should be efficient and a proper city hospital. And no question about that. Not a place for exploiting graft and doing things in crooked ways—not a bit of it. But a city hospital. We have one, I believe, in Syracuse, and while three or four years ago we had a great deal of trouble in getting patients there, now people want to go into that hospital, and children cry when they are taken out by their own mothers. If that isn't a proof of the efficiency of it, I don't know what is. Now I want to tell you how popular you can make it. This summer one of our prominent physicians acquired diphtheria. He, of his own accord, went to the city hospital. Dr. Halstead, another specialist, in treating him innocently for a sore throat, acquired diphtheria, and Dr. Halstead went to the hospital, and the words of praise that those men gave us were worth the whole thing.

Now as to quarantine of diphtheria, I would not take out at the present time people where they could take care of their children properly, but I want to say that during this last spring I visited during two days some thirty-nine cases of scarlet fever in the city. I went to every house to see what they were doing. They were in fine houses and among the better class of people generally, and how many did I find with a nicely prepared room out of the thirty-nine cases? How many? We have preached it, talked it, begged for it; we have sent men to help do it, to fix up a room. How many did I find? I found four where they had a place decent to keep a case of scarlet

fever. Just four. I did find children playing on upholstered furniture and every conceivable place over the whole house. We had sent men there and begged and pleaded and offered to help them and instruct them, and they would not be instructed. Now I believe, as I say, that the time is fast coming that the best way to educate people is to take their children out and take the mothers and fathers too, sometimes. They need it.

DR. GOLER—I wish I had not been the chairman of this meeting because I should have liked to take part in that discussion, but I simply held back because I think the chairman's business is to conduct the meeting and not do the talking. The quicker the physicians learn that and learn to conduct a meeting the better meetings and discussion they will have. There are a great many things I heartily agree with, and some I do not agree with *at all*.

I would like to make two or three announcements. There is a garbage plant in the middle of this city where the garbage of the city is disposed of, and anyone who desires to visit that plant we will be glad to make arrangements for them to visit it or give them instructions how they can reach it. There is also a municipal hospital for pulmonary phthisis incipient cases, I don't know what they are, but various kinds of cases, that we would be glad to show you or tell you how to get to that place. We would be glad also to open the health bureau in a building by itself, so that you may visit it and see the conduct of the office here in Rochester. After this paper I have a problem in milk work which we will be glad to demonstrate upon some animals which may or may not be tuberculous, and which we have kept for the purpose. We will be glad to show the technique by the injection of some of these animals with the milk of the city.

I have had our clerk bring up here the blanks and forms, etc., and will try to show that it is perfectly possible upon this plan, or a somewhat similar plan, to conduct the business of a health bureau, whether it be in a city of 2,000 inhabitants or a city of 200,000 inhabitants. In the first, in the organization of the larger city, we believe that the health organization should endeavor to segregate, as it were, the clerical and executive affairs and the milk affairs, and at the same time make the records of the department so that they may be easily and readily accessible to the men in the department, to the physicians and to the public. That material will be demonstrated afterward.

THE ORGANIZATION OF A CITY HEALTH DEPARTMENT

BY GEORGE W. GOLER, M.D.,

Health Officer, Rochester

The organization of a health department should comprehend an elastic and business-like arrangement of the department, so as to permit the orderly notation of the data of health and disease ready for instant reference and use, and the notification of that data to the physician and to the public.

Public health organizations were originated for the control of disease, the collection of vital statistics, *i. e.*, mortality statistics, for the control of nuisances, and the removal of wastes in their relation to disease. Our inquiry, therefore, is directed to the best means of doing the work of preventive medicine and for collecting and filing useful statistical matter relating to disease, and to health. To do this work, it is necessary that both order and discipline be preserved so that at any moment we may have this data readily at command in a form so that the physician or the layman may understand the problems which we as sanitarians have to demonstrate to them. As the subject-matter of this paper is so broad it will be dealt with generally rather than in a specific manner. In doing so I shall divide the subject into several heads, taking as a basis for the organization of a health department the work that is done in the city of Rochester, believing that although this is a large city, yet the manner of organizing the work in our department is such that it may be taken as a basis for the organization of a department no matter how small it may be.

VITAL STATISTICS

The manner of collecting marriages, births and deaths has been prescribed by statute. The entry of this material in a combined index and ledger may be carried on as in the forms here illustrated. The certificates of vital statistics are of priceless value for legal and social purposes. The good name of a woman, the

legitimacy of a child, the proofs of death for purposes of inheritance are of such importance that they must after being copied in a local register be filed in an indexed case and by the local register preserved in a vault or safe, and the originals at the end of each month promptly sent to the State Department of Health at Albany. All such copied records should be kept in book form. I do not know that even a loose-leaf ledger is desirable for such purposes. For other records and reports the card catalogue system is par excellence the system to be employed, except perhaps in cases where a desk record is required for ready reference, but even here the card record should be made the basis of the work.

NUISANCES

In our work it has been found that the card catalogue serves best the purpose of keeping the records of the office in an orderly manner. The basis of this work is a card of uniform size, four and one-half by eight inches, upon which, in answer to questions printed on the card, are entered all the data whether relating to nuisances, infectious diseases, the disposal of wastes, plumbing and drainage, milk, food or miscellaneous complaints. The cards for the different infectious diseases are differentiated by the colors usually associated with the disease as: Blue for diphtheria, pink for scarlet fever, and yellow for smallpox. Every complaint, or every report of whatsoever nature is filed with the clerk of the department who enters the substance of the complaint or the report of a contagious disease in a complaint book and places a slip from the book on a spindle in the inspector's room. The complaint slips are dated and serially numbered. The inspector takes his slip, goes to the premises indicated on it, fills out the card with the substance of his inspection and returns the inspection card with the slip attached, to the clerk on the morning of the following day. This slip is taken from the card and pasted over the duplicate in the complaint book from which it was taken: thus showing above the duplicate in this book the signed statement of the inspector, with the date, and if any delay in making the inspection, the reason for that delay.

If a contagious disease requires posting, a placard is posted on the house, all the necessary data recorded on the printed card,

corresponding in color with the placard, the names of school children in the house are ascertained, and the school the children attend notified on a printed form not to receive them until the expiration of the isolation period prescribed by the ordinance. When inspection cards of any form whatsoever are received at the office whether they relate to nuisances or infectious diseases, they are handled in the same general way. Wherever a contagious disease is noted, an abstract is made in a counter register, including date, street and number, name, time at which the period of isolation will expire, so that telephone and counter inquiries may readily be answered without having to go to the files, and so that the period of release may be noted and the inspector be furnished with the slip for the removal of a placard and the cleaner, and wherever the family insist upon it, the disinfecter may clean or disinfect the premises. Early in the morning cards that have been filled out with the previous day's work are collected by the clerk, the slips removed and pasted in the book by him, the cards referred to the health officer, who initials them, makes any necessary inquiries and then makes orders for the abatement of nuisances under the health ordinances. These orders are made on the back of the original card, these cards are then transferred to the stenographer, who makes the orders for service in duplicate on a prescribed legal form, stamps the card with the date of the order, and returns the cards to the clerk, who, before filing them, marks the copy of the order returned by the inspector with the date of reinspection, after the order has been served according to law. When the time for reinspection arrives the duplicate order kept in a separate file is given to the inspector, who makes a reinspection, and returns the paper to the clerk of the health office with his notation upon it. If the order has been complied with, it is stamped "abated" and filed away with the original form in the card catalogue. If the nuisance has not been abated, it is referred to the health officer, who initials it, making any necessary notation on the card, stamps it "Attorney," and it is sent to the corporation counsel for prosecution.

All data in the office, except vital statistics and milk inspection, are filed under street and number; for the location of a complaint and not the name of the person upon whose premises the com-

plaint occurs is of chief interest to the sanitarian. So, whether it be dirty premises, garbage, an open fly-breeding manure box, a vault, defective plumbing or drainage, a contagious disease, all data relating to any one of these nuisances or reports goes through the same simple routine and is handled under the ordinances as the law requires.

CONTAGIOUS DISEASES

In cases of contagious diseases, postal cards for reporting these diseases are supplied to the physicians. These cards are given the inspectors who return them to the clerk dated and initialed. In diphtheria, an inspector, assigned for the purpose, makes all cultures and refers them to the bacteriologist for examination, who reports the result in a separate counter register for ready reference. Sputum is to be sent to the office in bottles specially prepared by the office and results entered in a similar counter register. Reports of procedures and precautions in cases of pulmonary tuberculosis are received on forms according to law and filed in a separate card system.

PLUMBING AND DRAINAGE

Plumbing and drainage inspection is performed by a chief and three assistant plumbing inspectors, the data filed on a card system, as shown by the appended forms.

MEDICAL SCHOOL INSPECTION

Medical school inspection is performed by twelve medical school inspectors; each physician has from two to three schools in his district, and is responsible for the personal hygiene of the children in the schools, the sanitation of the school buildings, and is also responsible for the care of the sick poor in the school district in which he visits. His work in the schools is mainly directed to the physical examination of school children, and his reports are returned on cards, as shown, and are filed for reference.

Children who suffer from defects are referred to their parents with a recommendation to secure proper medical supervision and treatment, or they are, with the permission of the parents, re-

ferred to a dispensary, many cases to the clinics of the Rochester Public Health Association, without whose aid this work would have been impossible of performance.

MERCANTILE INSPECTION

Those children between fourteen and sixteen years of age who are compelled to go to work are required to comply with the statute relating to mercantile and factory certificates. The law requires these children to be in good physical condition. Every child applying for permission to work is weighed and measured by the mercantile inspector, and if any marked departures from the normal are found by him, the child is referred to a medical officer for examination. All data relating to the child are filed on a card. The nose, throat and teeth defects are charted on the card, and the child required to have these, or any other defects remedied before the certificate is granted. The child of parents financially unable is referred to the clinic of the Rochester Public Health Association.

FOOD AND MILK

For the inspection of restaurants and bakeries a score card is being designed, and these establishments will be scored on the basis of one hundred.

Dealers of milk are licensed, and each milk retailer is required to exhibit a sign on his wagon or in his store. For the inspection of dairies score cards are used, a card of a somewhat different character being provided for milk producers. These score cards are filed, the essential points being entered in a tally book for ready reference. Every producer and dealer receives a personal letter.

Two milk inspectors collect milk samples for chemical and bacteriological examination. These samples are received by the chemist, who refers them back to the office for prosecution if a violation of the milk ordinance is found.

TUBERCULOSIS

A clinic for tuberculosis is maintained at the health office where patients in any stage of the disease may apply and may be cared

for at the Municipal Hospital for Tuberculosis without cost if they are financially unable. The records and the examination forms for patients are kept by the same simple score card system.

TENEMENTS

With the growth of the population, want of cheap and ready transit, the housing problem in cities is assuming large proportions. In an attempt to secure an adequate housing law a score card for dwellings after the plan of Professor Commons of the University of Wisconsin is being used by us.

This in brief is the work and the organization of the Rochester health office. Every inspector reports at the end of each day the number of inspections and the character of the work performed by him. Weekly meetings of both the medical school inspectors and the sanitary inspectors are held, and occasional visits in the districts are made with the inspectors.

The work herein outlined is of course the work of a city of many thousand inhabitants, and it may, therefore, be said that this plan cannot be adapted to the work of a village, town or small city, but this is not so. However small the place and few the workers, the plan is so simple and so elastic that it may be applied to any town, village or city. Given the smallest town with a health organization, a four-drawer card catalogue, with as many different printed forms as may be desired, two or three blank books printed, or with headings written in by hand, two or three filing boxes for keeping certificates and other forms, and the same general plan for carrying health work may be successfully carried out.

In a great State like that of New York a uniform plan of filing sanitary and hygienic records is of such importance that the application of a system that shall embrace the whole State would be of great benefit, not only to the State, the health officer and the medical profession, but to the general public.

DR. H. M. HICKS, Amsterdam — *Mr. Chairman, ladies and gentlemen*—I wish to thank the essayist for his very practical and able paper—it shows the working out of a comprehensive scheme, it is a living active demonstration of its worth and value.

I had the pleasure of being shown through the health building this morning by Dr. Goler, and I want to take this occasion to congratulate the

city of Rochester on its very active and progressive department of health which is so ably managed by Dr. Goler and his trained assistants.

Dr. Goler has seen fit to advise his system, because of its practical value and simplicity, for the entire State, or for those portions who have not yet developed a satisfactory system of their own. Very good; I am in favor of a uniform system, although, of course, we all realize that this system must be modified so as to be elastic enough to fit the small, medium, and large communities. Now let us get at it, let the dreamer dream, give the fellow with a theory an opportunity to suggest his theory, and last but not least, the practical, the common sense, the well-tried plans, be brought forward and discussed in these meetings, and ladies and gentlemen, out of this mixed and perhaps heterogeneous mass, of how to care for the best interests of the communities' health and happiness will come a system approaching perfection.

One word in defense of my statement as to dreams and theories. It is not all of us who possess the rare gift of the gods, originality, who can, at any time they may be called upon, be trusted to make something new, their inspiration always equal to the occasion.

But you say, they are often impractical, their ideas will not stand the grilling of experience. That also is true, but don't get discouraged, try again. Charles Darwin possessed a rare mind, and he was constantly theorizing, and as he himself admits, he never had a theory that he did not have to change except one, that was the theory of the coral reefs.

We are living in a great age. We are emerging from a condition of darkness, to one in which we can see one way, as yet dimly. It is within the easy memory of every person in this audience that our knowledge of micro-organisms has been obtained. And, ladies and gentlemen, what a field it has opened. To be brief, it is summed up as follows: find out your micro-organism, and then prevent it. Don't talk of cures; prevention is what humanity and modern civilization demand, and it can only come through you as modern, official sanitarians. Now to get back to this subject of health boards and their organization. I believe we should have a comprehensive scheme that will be universal through the State. I believe that every board of health should make a report on what it has done, to the State Commissioner of Health annually; this is important. Let us have a bureau of information, at least, if we don't have the universal system, where the rest of us can go and find out what some of us are doing and how we are doing it. It would be a great source of help.

Think of it, your State is so alive to the necessity of its military that it knows down to the last strap what we have, and where we have it. Not only that, your national government is also so awake to that fact that it also knows just what every State has, and very carefully inspects them annually. Now, is not the protection of the health of the community just as important? And are we not just as worthy of as careful organization against the greatest foe in the world disease, as against war?

But, as I said, we are emerging from a darkness that has always recognized "war and rumors of war," and has paid but little attention to disease prevention.

I wish, however, to say a word for the men of old, that whoever wrote Deuteronomy was a first-class sanitarian.

DR. GEO. W. MILES, Oneida — I was much interested in Dr. Goler's remarks although I was glad that I was not health officer in Rochester. These technical details in which he deals I presume are valuable in a city like this where a corps of assistants is at hand in every department, but what of the smaller city — and I represent that class — a city of 10,000 where the health officer does it all? I did, during the past summer, succeed in getting one inspector added to the body to assist me; otherwise the work is done personally by me. It seems to me that where the conditions are like that they must be different somewhat from the organization of a health department of a city the size of Rochester. I doubt not that there are a number of cities nearer like my own than Rochester. A business-like arrangement like that in the city of Rochester is recommended by Dr. Goler. I agree with this entirely. It is not always easy to have that business-like arrangement for

the reason that you do not always get business men—men of business tendencies and ideas and men having the courage of their convictions to act as members of health boards, at least in the smaller cities. There is where you get politics again. In my own city it is quite as often the man who is in the political work, who is ignorant of sanitary matters and even more ignorant of the principles. If a man is afraid to do the proper thing as a health official because he may not be able to sell a necktie in a gents' furnishing store—I have found that sort of man—then we cannot get and we will not have, the business-like arrangement in the health department. I do not think, in fact, that we will have a business-like arrangement at all in the health department until we come to the millennium time, when parties are not connected with it. As long as health board members are appointed by mayors and confirmed by common councils perhaps, and sometimes not confirmed, I do not think we shall have very much in the way of business-like administration of health affairs in the smaller cities.

There is one point that I thought of in reference to the reporting of contagious diseases. In my own case, in the city of Oneida, it is the custom to report immediately to the school principals all contagious diseases. I think I have found this a considerable help during the two years. Immediately on the outbreak of communicable disease in any ward, I notify the principal of schools in that ward and notify him that no children in that family—no one in that house, teacher or scholar—shall be allowed in the school until further notice. The milk inspection in our city has gotten as far as the registration of the dairies and no further. Ran up against politics once more. During the past summer I undertook to go further but we had to have money, and on appealing to those higher up I was told that expenses must not be increased, election was coming. In regard to medical school inspection, nothing has been done in our city. I should be rather interested in hearing from health officers of some of the cities of my own size as to what has been done, if anything, along this line, and their case would be a guide, perhaps, to mine.

DR. C. C. DURYEE, Schenectady—I want to say right here that there will be one city in the State where there won't be any politics in the health bureau.

Two years ago I attempted to outline a plan of bookkeeping, as we might term the organization of an office, that would be easily gotten at, the data should be readily found, and should be sufficiently accurate. I have floated along on that work, adding a little where I could get the information, and my system is not nearly so elaborate as the Doctor's, nor do I think it is as good as his. I am willing to say that, after knowing something about the operations here. We use the card system only in certain directions. In reference to our communicable diseases, we use the telephone. For the children in schools the inspectors notify the homes and the child is not permitted to attend the schools, and no one permitted to leave the house after the day the quarantine is settled. The school superintendent is notified of the number of children that are in that house and where they go to school. The secretary of the school board is always ready at a certain hour every day to take that, and then telephones to the schools all over the city the names of these children and they are not allowed to go to school. In regard to their returning to school; when the patient is released, when fumigation is done, we then send word to the same parties in the schools, and that releases the teachers from preventing the children coming. I must say I was very much interested in Dr. Goler's paper, as everybody is in his work in this city, who has any interest in sanitary matters, and I want to say I have gotten some very valuable suggestions which I hope to put into operation next year, although I shall not be health officer.

DR. GOLER—I wish to say that I have not by any means elaborated this scheme that we have in use in our office. It is a scheme that has gradually grown up. I could not have done this work without the valuable assistance of those who are associated with me and have long been associated. I was a most disorderly man I suppose, I never put anything by any possible means

where I found it, and it is an awful task to learn to be orderly, but it is simply the question of when one man has developed one department and another another and we have worked it over, adding something, taking away something, and have tried to build up this scheme as the years have gone on. Dr. Miles asked when a health officer does it all himself. That is what the plan is for, because he can do it so much better. You say you have not had the money. I would like to say a word on that. When I could not get money I practically said to the people "if you can't get the money, I will go out and tell some friends of mine you are too stingy to get it," and that always got the money. I want to say in response to Dr. Duryee that a telephone record is not a written record. We do not take telephone records. We require a record to be in writing.

DR. TOTMAN — We have had a good session, as I think you will all agree, and I hope this is the beginning of similar sessions another year and great good may grow out of it.

One question was asked about a teacher having tuberculosis, which was not answered. I think if I had the solution of that I would give the parents of the children in that school knowledge, and I think there would be a good vacancy there. The other was the case of a bell-boy in a hotel. That is a different thing. I think I would take that up with the proprietors of the hotel there and there would be trouble about it. These are delicate things, and we must not interfere with employment any more than we can help. I think there is a good chance for missionary work, and we must be careful about interfering with the employment of tuberculous people, but it is necessary to take care of them and it can be done.

SECTION B — VILLAGE AND TOWN HEALTH OFFICERS

DR. HOWE, *Temporary Chairman*

THE CHAIRMAN — For one minute I would like to repeat the request that those who have not signed this little card for the Ophthalmia Neonatorum should now do so. You will kindly sign the cards and leave them with the register.

I am glad to see we are in the majority in this hall. The greatest sanitary work of the State is in the rural districts. There is no talk about it. We have the forces to do it, and being, or having been for a number of years, a country health officer, I think my sympathies are with you.

While we are wishing well for the city fellows I am with the rural people. If there are questions troubling us let us have them out. I do not think any of these questions will be so lengthy but we shall be able to discuss the practical questions of interest to the country health officers.

Now, we are privileged to have with us not only one of the most active city workers in sanitary matters, but also one who is a most efficient country health officer. I do not know of any other instance where a man who was so active in city health matters is also so active in country health matters as we find them combined in Dr. Leary, who will speak on the subject of the "Work of a Health Officer."

DR. LEARY — I came here, gentlemen, to talk to you, and if you do not hear me let me know and I will raise my voice or get a megaphone.

THE WORK OF A HEALTH OFFICER

BY MONTGOMERY E. LEARY, M. D.,

Health Officer, Town of Gates

While the views expressed in this paper may be deemed pessimistic as to some present conditions, and perhaps by some too radical as to things desired, yet they are the outcome of some twelve years' service as a health officer gained not only from personal experience but also from intimate acquaintance with others holding a similar position. There has been no desire to belittle the efforts now being put forth by many conscientious men throughout the State, nor has there been any intention of being hypercritical over present conditions.

The present administration of the New York State Department of Health has done much to improve and develop conditions under its jurisdiction. More systematic management of the central office, closer co-operation between it and the local health officers, more rigid inspections of food and water supplies and

many other things have been accomplished which have tended to place the Empire State in its proper position. Let us not think though for an instant that all has been achieved—far from it. For example, compare the same line of work in our neighboring States—Massachusetts and Pennsylvania! It is needless to enter into details, but take the fight against tuberculosis—Pennsylvania in a year appropriated \$400,000, New York \$10,000. This year our State Department is limited to nine places where they may have their traveling tuberculosis exhibit—nine weeks! It should be on the road at least forty weeks out of the year. Rochester in one week in 1908 had over 25,000 of our people visit it. Since then an immense work has been done and an extensive plan of campaign inaugurated. We want it again, now, but must wait two or three years for it. Why? No funds and “it must visit new places.” Why is this so? Because our legislators always cut down the estimate of the Department of Health. They do this because of their ignorance of the needs of the work, and we, the local health officers, over 1,400 of us, what have we done to educate them; what pressure have we brought to bear on our local representatives to secure their active co-operation with the department? This leads to the first point in the work of a health officer: Securing the hearty support of senators and assemblymen for the State Department of Health. Just so long as we medical men as a profession, and health officers as officials, permit matters of public health to be limited and hampered by lack of funds and the indifference and ignorance of legislators, then so long are we responsible for our State being behind other States in carrying on this work.

Massachusetts is divided into sanitary districts over which is placed a sanitary officer having full charge of various health matters. It is needless to go into detail. But does not that management at least give us a chance to think of the possible advantages of a systematic division of the State into districts conforming to the present counties with subordinate town health officers? Some time ago it was proposed to abolish the local town health officers in favor of a county health officer. This met with strong protest from the men directly interested. Perhaps that plan had some good in it which could with advantage be adopted.

We must confess that in this Empire State it is an incongruity, to say the least, to have its health matters administered by a State department and over 1,400 local health officers, each working under local laws and ordinances drawn up and administered by local boards, made up of men in general ignorant of such requirements. No two towns may have the same rules and the same penalties. For instance "spitting in public places" is punished by a fine of \$2 in some places, by \$50 in others, and I have heard of a \$200 penalty in others, but never an arrest or a conviction, and yet streets, cars, etc., are filthy and dangerous just the same. In other words, there is no uniformity either in the laws, rules and regulations of the various local towns or in their enforcement. We health officers are physicians first. We are health officers "on the side." Often a conflict arises between our two functions. How often has the enforcement of health regulations lost us families; how often have we been called in to treat contagious diseases in the hope that we would not placard our own cases. Would it not be better for all concerned if the health officer did not have so much responsibility placed on him personally? Don't you know of cases of contagious disease which were never reported? If you took official action you were accused of trying to spite a man practising in your own town. If you took no action, you were and felt you were a coward. Some action ought to at once be taken which would bring the local health conditions under a uniform system. Appoint the local health officer as at present from his town, but abolish the local board of health. It's a farce anyway. What do they do? Meet occasionally, spasmodically, seven of them at \$2 a day to discuss a matter which one trained man could decide in ten minutes. Fourteen dollars for the board, and yet a physician could spend all day investigating conditions he is held responsible for, get \$2 and lose five or ten times that amount of practice.

2 Securing uniformity:

a of rules under which health officers work;

b of action by the health officer in enforcing Health Law.

Until some such uniformity is obtained, we need not wonder that more will be freely spent by the State Department of Agri-

culture in suppressing the diseases of horses, cattle and hogs than the State Department of Health is allowed in order to protect our people. Army men have a saying only too true when applied to some other things than military, "An army mule is worth ten men."

Most health officers find after a time an accumulation of records, cards, papers, etc., which around his office soon become a nuisance. The town clerk and office being the depository for other records should also include provision for those of the health officers. The salary paid is inadequate for the services rendered. Most men are paid by the call, but how shall the many hours of clerical work be remunerated? Only by having it done by some official who has not only the time and convenience but is also paid for such labor. Most towns have imperfect records kept of the various statistics. Who could look back a few years and investigate an epidemic of some contagious diseases. Cards, etc., if kept, may be in the houses of several physicians who have held the office of health officer. Again, the making out of records is too often burdensome to a health officer who desires to perfect the details of his office. If the blanks he has to make out could be printed so that an original and copy or duplicate could be made at the same time, much labor would be saved him and as a result more accurate and complete records made.

3 Records should be easily made in duplicate and filed in the office of the town clerk.

Until this is done and the burden removed from the health officer, there will result loose methods and no incentive to better, for at present any desire to improve merely means more routine and clerical work for the health officer.

How insufficient and inexact oftentimes are the statistics furnished to local boards of health. This probably is no truer of the town boards than of the health departments in municipalities and villages, and depends more upon the failure of physicians to comply with the regulations than upon any lack of effort of the health officer. Deaths, of course, are necessarily reported promptly in order to secure a burial permit. Births are reported less promptly than deaths and oftentimes inaccurately, although much has been accomplished in securing better results by paying for the reporting and filing of births and deaths by the attending phy-

sician, although oftentimes physicians have not bothered making out their bills for filing birth and death records. A fee for the filing of a record of each case of communicable disease would improve the accuracy of the records and the promptness of their filing.

4 Statistics should be more accurate by securing co-operation in prompt filing by the attending physician.

No figures will have any real value till this is accomplished.

The local conditions with which I am familiar are peculiar, as the town of Gates is contiguous to the city of Rochester and there are no physicians residing in the town, therefore all of the medical practice is done by physicians living either in the city or in towns adjacent to the town of Gates. I have had physicians living in the city of Rochester, when called to account for not reporting cases of contagious disease, apologize on the ground that they did not know it was necessary to report such cases in the country. Why they should imagine one condition of affairs existed up to the middle of the road which separated the city and the town, and an entirely different condition of affairs existed on the other side of the road I cannot imagine. A contagious disease is just as dangerous and quarantine as necessary in the one case as in the other. I sometimes question the honesty of the explanation. Some cases are much delayed in their reporting. A short time ago, a case of diphtheria was reported at 9 o'clock at night. On going out the next morning about 9 o'clock to placard, it was found the child had died at 5 a. m., having been sick for three or four days, and another case of the same disease was recovering after an illness of a week. The latter had never been reported, and anti-toxin was used in both cases early in the disease.

One is led to believe that if the second case had not showed indications of dying, neither would have been reported, and there would have resulted a focus of infection. What is best to do in such cases? Report it to the prosecuting officer of the town board? Nothing is done. Take it up yourself and swear out a warrant? Acquire the hatred of this physician forever after. The straight path of duty is clear, but the prosecution of such measures should not rest alone on the health officer. Too often physicians not only conceal cases, but misinform the families; as, for instance, a case of scarlet fever was reported with the sug-

gestion that it was so mild that quarantine was hardly advisable for the enforcement of measures too severe and rigorous; when this physician, as a matter of course, knew that scarlet fever should be quarantined rigidly and for a specified time. Last year there were nearly one hundred cases of measles found in one town, and of these not more than twenty were reported, and only one-half of these by physicians. Yet in many cases, physicians were in attendance. One physician told me that when his families called up, he prescribed over the telephone so he would not have to quarantine. Easy conscience. In the securing and placing of placards there should be a uniform sign secured or furnished by the State. This would tend to systematize the whole process; make it easier for the local health officer to secure proper signs or placards, rather than as in many cases, being left to his own ingenuity in many cases. Some towns use but few placards, and to secure any considerable supply would be rather expensive and burdensome. If these could be obtained or furnished uniformly, it would make it easier.

5 The reporting of communicable diseases should be paid for the same as births and deaths and the failure to promptly report should be immediately investigated and prosecuted by the prosecuting attorney of the local board.

If something of this sort is not done there is placed a premium on concealment of cases.

How few cases of tuberculosis are reported in the towns. In the past year not a single case was reported in the town of Gates, and yet four deaths were attributed to that disease. This, of course, is the same condition of affairs as exists in the cities, and yet how much could be accomplished if the local physicians and health officers would only learn to treat this disease the same as they treat other communicable diseases, or rather in the light of the remarks in the previous section, treat this disease even more ideally. Why should not the people of the towns be entitled to the same protection from this disease as those living in more thickly settled portions which we call villages and cities?

How many town officers are there who have distributed supplies to tubercular patients? How many have given instructions in such cases? And yet the local health officer, being a practising physician in a town along with two or three other physicians, is

always liable to the unjust criticism if he shows any interest in his work of "being out after patients." If he is sensitive, he hesitates to carry out those methods which he knows are right. If he is a little unscrupulous he becomes overzealous, and yet, I think, taking it all in all, a physician who assumes the position of health officer in a long run is apt, if he is any sort of a man and honest in the performance of his duties, to unjustly make enemies.

Some provision should be made by which instruction is furnished the residents of towns upon subjects connected with hygiene and sanitation. Local boards of health might well provide a portable lantern, screen and slides, and the health officer should be remunerated for his services and throughout the winter a systematic course of instruction by means of lantern lectures offered to the residents of the town. These talks could be given in the local schoolhouses and thus reach a number of centers of population. By doing this during the winter months, the residents would not only be instructed but entertainment furnished at a season when time is not so valuable as at other periods of the year. Perhaps by assigning different subjects to other members of the profession living in the town, greater interest might be stimulated and the matter of lecture fees be reduced, but someone must of necessity have charge of the apparatus, and the arranging of the talks, and this falls upon the local health officer, who should be properly remunerated therefor. Adjacent towns might unite in the purchase of apparatus and thus lessen the expense. There is no more entertaining way of instructing than by lantern slides, which need not be limited to tuberculosis but might well be used on many occasions. Disinfection after removal or death of a case of tuberculosis is I suppose honored in the breach. Some suitable apparatus and competent person ought to be secured by each town and the provisions of the State law rigidly enforced.

6 Tuberculosis should be handled in the towns as in the cities. Instruction should be furnished and disinfection carried on.

If this is not done we lay ourselves open to the just criticism of lacking in the instituting of preventive measures.

How simple it seems to go to a resident of a town, tell him of the existence of a nuisance and consequent complaint, investigate and demonstrate the proper remedy. Come back in one week or

two weeks and you find — nothing done. The second or third visit you begin to insist and you find out what might have been perceived at first, there is no intention of bettering conditions. Perhaps by moral suasion, you may get, after an hour's argument, promise of prompt action. These results are expensive to the town and to you. Money and time wasted. The health officer should not be expected to do more than make the first inspection, suggest proper remedial action, give definite time for their application, call promptly at the expiration of that time. If proper action has been taken the complaint and resulting action should be filed in the town clerk's office. If no action has been taken, then immediately a report should be placed with the prosecuting officer, and he should be compelled to act promptly. The health officer should not be or expected to be responsible for the direct enforcement of the law or its penalties.

7 The enforcement of remedies for abating nuisances should not rest upon the health officer more than to report the existence of the same.

Sanitary conditions will never obtain in town or country districts so long as the health officer, often the attending or family physician, is the only one to enforce them. He accomplishes much, by mere suggesting, of which he never knew but in flagrant cases. He is not the one to play policeman.

If the average health officer of an average town were to properly and thoroughly inspect the sources of milk and food supplies, would he not be accused of working a graft? To better the common, ordinary, existent insanitary conditions is a matter of education. It takes time. To teach the average farmer is like teaching a child. He has to be shown over and over again. Even then he often "forgets." Instruction has to be repeated. No town health officer wants to go about with a club and demand the institution of proper conditions. It means too often fight! We as physicians have too many worries and aggravations to seek new troubles, but unless we do some of these things are we living up to our duties? Why should a farmer in our town be allowed to raise milk under the most filthy conditions for shipment to a neighboring city or village (yes, or even for sale locally), and we make no protest or endeavor to correct these conditions under

which it is produced? Why should all such endeavors rest upon the health officers at the consuming end of the line? Would there not be greater hope of success if there were hearty systematic co-operation at both producing and consuming ends of the line? But suppose we started out to institute such active systematic efforts, can you see any opposition, or our fees viewed with the suspicion of personal aggrandizement? Yet who can deny the necessity of those same endeavors to purify at their very sources our food supplies. Would not such ideal conditions the sooner exist if there were greater uniformity and co-operation among the various health officers? While on the other hand would they not exist the sooner and more effectively if they did not depend so much upon the local physician, but more upon him as a man and official representing the State and a sanitary district?

8 Milk and food supplies should be more thoroughly investigated and insanitary conditions corrected by officials at the source rather than at the consuming end.

The State Agricultural Department does a great work along the above lines but inadequate at the best and no active and sincere efforts toward bettering the conditions of food production can afford to be ignored. They would be strengthened by the oversight of the large number of local resident health officers.

How often are the large numbers of school children under our care ignored; their rights to sound bodies forgotten? Education is not all a matter of books. To the one-half blind, deaf, under-developed, ill-nourished child education is a torture. Little do we realize how remediable physical conditions affect the mentality of children. Criminals, degenerates, and the vast mass of those in public institutions at public expense, in a majority of cases, are there as a result of uncorrected pathological conditions existant in and from childhood. And still we wonder at crime! In the cities, in Rochester, such conditions of children are being sought out and cured. Adenoids and enlarged tonsils, mouth breathing, defective eyesight, defective dentition, deformities with their primary and remote reflex conditions are known to be responsible for large numbers of school children being classed as "slow," "stupid," "lazy," "ill-tempered," "ugly," "vicious," etc., and when corrected or removed, result in an entirely differ-

ent mental condition. They become receptive, studious, anxious to learn. This is not theory, it is a fact. To prove it ask many of the Rochester public school teachers, and to see the results investigate the Children's Dispensary of the Rochester Public Health Association. Are town or country children any different from city children? Are not their lives and health of as much importance? Are we as health officers doing our full duty by those under our care if we do not endeavor to institute some form of this work? Perhaps the conveniences are not so great as in the centers of population, but some way can surely be found. Vaccination laws should be enforced.

9 Medical school inspection in some form is vitally necessary in the towns and villages.

If the opportunity of this work is neglected, we cannot hope to have the people believe in the unselfishness of our work. It would increase their respect for us.

At present the majority of health officers are paid by the fee system. This is old fashioned and has become out of date in every other official position. Too often the conscientious man is held back from doing work for fear of being accused of increasing his fees or else often does work without remuneration. In either case it is wrong. The only proper remedy is to place the office on a salary basis. Not at the lowest salary, for some needy physician can be forced to do it, but at an amount which will properly remunerate an honest, active, intelligent, competent man. Under present conditions, the man who has no practice but plenty of time is not the best man for health officer. In emergencies the salary should be supplemented to meet the extra conditions imposed.

10 Remuneration for health officer should be by proper salary and not fees.

This would stimulate the honest, energetic man to do his best. No other sort of man has any place as health officer.

Sometimes, but let us hasten to say, not often, the position of health officer depends almost entirely on such local conditions as "pull." Once in, a man might be called on to influence his actions to the will of the appointing powers. Aggressors often feel aggrieved and develop a personal dislike for an efficient man. The

plan in operation of having the State Department concur in the appointment of local officers was a step in the right direction. Some way should at once be found to produce greater centralization in this office. Whether by concurrence or direct appointment; by county health officers or sanitary districts will have to be developed, but constant efforts must be kept up toward obtaining more ideal conditions. These will never exist until we have greater uniformity and systematic action and co-operation.

THE CHAIRMAN—This paper is open for discussion, and Dr. Frank W. Overton, of Patchogue, will lead in the discussion.

DR. FRANK W. OVERTON, of Patchogue—The first suggestion that I would make is that it would be far better to have these papers placed in our hands one week before we are to discuss them. Our rambling remarks might then be more brilliant had we time for preparation. The speaker has made some eminently practical suggestions along two lines. First, he suggests the work of legislation, beginning from the outside of the community, imposing upon the health officers, to have the people do certain things after the continental method. The legislation suggestion should be carried out, and the educational suggestion should be carried out also. I wish to emphasize one or two points which the speaker might have dwelt upon with more freedom.

The chief difficulty in the work of the health officer is not in the health officers themselves; they are pretty well up in their work, notwithstanding some of the remarks which were made to-day. I do not think the trouble lies with the people; they are "pretty ignorant;" and they should be accurately informed of what to do, when they are sick with contagious diseases—then they are unwilling to act, but they are willing to help you clean up their neighbor's yard, so I think the mere suggestion to 99 per cent. of the people is enough. I do not think it is so much with the doctors. Doctors are remiss in reporting cases. But suppose every suspected case of measles or diphtheria were reported. We would be busy all the time. I do not think the trouble lies there. I think the chief difficulty in carrying out our duty lies with the very method of procedure prescribed by the laws. And it is 1 or 2 per cent. of the people who are cranks, who are the ones who would give us trouble, and they are the ones who set the example for other smart alecks. We can suggest to the people, but if the people of New York State really knew how much power we had I think we would accomplish very little. The method of procedure in dealing with one of these recalcitrant cranks is, first, the inspection is made. The next step, if the suggestion is not carried out, is to make a report to the board, and they take firm action on it. That is supposed to be sufficient. "We shall do certain things," and it shall be a charge on the community, and those parties shall be subject to certain penalties. That is usually sufficient when they get that.

Now the health board has absolutely no power to enforce its own decisions. We have got to go to law and bring a civil suit to recover the expenses of carrying on a quarantine or a criminal suit as a misdemeanor.

Now you cannot bring a suit in a day. It takes about a week. Then you have to bring it before a jury, and by the end of that time public sentiment has cooled down and you do not get any convictions. I have tried it a number of times and never got a conviction yet. I have never heard of a conviction under the Health Law by local health officers. We simply cannot get the convictions.

The practical suggestion is this: I would disagree with Dr. Leary that local boards of health are no good. Suppose all this power was in the hands of the local health officer, he would have to be a judicial man to keep himself above suspicion. If the people do not carry out his instructions immediately then let the health board take a hand in it, and then let their decisions be

final. Of course, we have recourse to the courts, but I would not have it obligatory to go to court to enforce the rules. Give them the power to enforce the rules, and give the remedy to the citizen of applying to the courts where they abuse that authority.

THE CHAIRMAN—The next is Dr. Nickelson, of Adams.

DR. W. H. NICKELSON—*Ladies and Gentlemen*: I wish to indorse all that Dr. Leary has said. He has pictured very nicely the condition of the rural health officer. If there is anything that a rural health officer does not desire it is to be a health officer. We have heard it stated to-day and yesterday that our ordinary board of health was a farce. In most towns it certainly is. It all falls back on the health officer.

Now, when can a health officer, who is conscientious, and wishing to do his duty to himself and to his community, when can he enforce the laws without offending every physician in his locality? In a few years he will have more enemies than friends. Is this justice to the health officers in the State of New York? We are here, 1,400 of us. I, for one, could not do what the State Board of Health asks me to do, and what I think I could do, or should do, for \$2,000 a year. I must do the best I can and patch the thing up, and when I have put the patch there I am through.

I do not pose as a reformer, but there are a few suggestions that I would, as a rural health officer, like to make. Our present board of health—we had hard work to find three men—one of them moved away, and the time of the other one expired, and the consequence was we did not have a board for three months, and they appointed a board which tries to keep down the expense of our town.

He said: "We have not made much expense to the town or village." I said, "No, you have not." That was my answer.

Do away with your local board of health. There has been talk of sanitary districts. Give us a district deputy, and let him be a member of the State Board of Health; and then if we want a health officer, and perhaps a clerk, then, if we cannot enforce the law, we can call in this district deputy and let him proceed against these offenders. Then if you put a fee on every contagious case so that the attending physician can see to it that it is to his financial interest to report that case, I think he will report it. Then give the clerk a fee for recording it, and give him a good fee. Then if the fee is large enough, we will get a correct record and keep it. But do not ask the health officer to do this for nothing.

Now, is it justice to this Empire State to ask us to make this sacrifice? I for one stand here and say "No." But what must be done? We have an efficient State Department of Health, but it is handicapped for the almighty dollar. Pennsylvania hands out nearly one million dollars and Massachusetts hands out all the money they ask for, but we must go to every assemblyman and senator and ask them to give us something. We would a great deal better do that than help build this big ditch, I think, appropriate money for the State Board of Health to prosecute this work.

Millions we are spending there, but a few thousand dollars spent for our health or for the health of our community is too much. We should spend a little so that the health officer can be a conscientious man and not ruin his practice by trying to carry out the provision of the law in reference to these cases.

THE CHAIRMAN—That touches the keynote, gentlemen. Let us have a little more of that.

DR. C. C. VEDDER—*Mr. President, Ladies and Gentlemen*: I hope I shall not have the experience which one speaker had.

The question seems to be in a great degree: What is the sanitary officer to do to enforce the law? That seems to be the great point. It is not so much about how the law shall be enforced, and all that sort of thing, but what shall be the penalty when they do not comply with the law—when people insist upon doing as they please?

In regard to Dr. Leary's remarks, I can second the motion all along the line except for the abolition of the town board of health. If a health officer started to do this work alone, he would be accused of individualism — that he favors this family and that family, and puts it up to the others.

Now, my friend who got into a row with the old school-m'arm — we have many of those school-m'arms up our way. It has always been my first thought to do my duty as I saw best to do it, backed up by a good few resident citizens on the board. I think it is well to keep them there with us. We have their moral support.

Now we have a grand country, and to preserve the honor of that country, we have a Grand Army, and a Grand Navy, and so grand was our navy that it went around the world and did not lose one man. That is for the honor of the navy. Whoever heard of a lieutenant being arrested, or a captain, or a colonel, or a general being arrested for carrying out his orders and doing his duty? But we have heard of many health officers being threatened with arrest when they tried to do their duty.

Now we can establish a law directly from the State, imposing a fine on these refractory people, and fine them, and let that fine go to the support of the Board of Health.

THE CHAIRMAN — I was sure the doctor would make a hit if we got him up here.

DR. HUGH HALSEY, Southampton — Dr. Leary, in his admirable paper, is looking forward to ideal conditions, or at least hopes for them. But great changes will have to take place before local boards of health will support or pay their health officers for such services.

Trying to influence legislation, I believe, should come entirely through the State Department of Health. Few can have any influence unless they control votes, and when politics get in health matters we can never look for ideal conditions.

It would be interesting to know just how many local boards of health really favor anything much more than attention to quarantine, and other methods used to suppress contagious diseases. Inactivity saves the town expense, and the board much trouble, and generally, criticism. Health officers knowing all this are obliged to go slow. All, probably, have been much troubled with complaints of nuisances that are inspired by personal animus, and with reports, statistics, investigations, and general missionary work, cause much trouble, for which we receive little pay and no thanks.

In conclusion wish to state that in my opinion more pressure upon local boards of health by the State Department, and some education would induce a healthy activity that would help wonderfully, and would no doubt save the State Department much money by having detail work done by and at the expense of the local boards.

THE CHAIRMAN — That concludes the list of printed speakers down for discussion of this paper. Now, we will open a five-minute discussion on this paper.

DR. SINCLAIR — A case of scarlet fever was quarantined by myself, and the next day the man of the house, who was quarantined with it, deliberately went off to an auction sale and stayed all day. I heard about it the next day and called upon him, and he said "Go to grass" — well, if it wasn't "grass," it was to go somewhere.

I am proud to say that my board of health stands by me. The other member is the law member. He was a justice of the peace, and I presented the case to him and he said, "I will give him a talking to." He rung him up by telephone, and the man said to him, "You go to grass," or elsewhere. Then we reported the case to the supervisor, and he told the supervisor to go to grass, too. He was staying in just then, and I anticipated that something would be done if we got the whole town board after him. But nothing was ever done, and I guess we all "went to grass."

Now, whose duty was it to prosecute that case? Was it mine?

Another question: Suppose I had brought this man before the justice of the peace, the member of the board being the justice of the peace, isn't he an interested party, and is he competent to pass on the case?

DR. WARNER—*Mr. Chairman and Gentlemen:* I have been greatly interested in the reading of the paper and the discussion, and necessarily have formed some ideas as to the general design of the paper, and the discussion which follows. It is evident we have before us a condition, and the question is, whether we must meet that condition, or, whether by legislation, we should seek to change it. To my mind, the best way is to see what we can do with the present conditions. We have a Department of Health, and our health officers in all of the towns of the State.

Gentlemen, I admire the profession to which I belong, above any other class of men with whom I am acquainted, and I also admire throughout my acquaintance the gentlemen who make up the various boards of health in Cattaraugus county. I believe as a class they are good men. But, there is this situation: In that county, as elsewhere, a health officer is the only man posted on the Health Law. Now, what we need to do is to get sufficient enthusiasm in every health officer, and inspire his board with the same feeling that he has in the work which they have to do, together. If that is made in a proper manner, with tact on the part of the health officer, it will meet with proper reception on the part of the board.

But if a man with a desire to be imperious, thinks to extort from them things which they might do without a fair explanation, he will meet a rebuff. If he goes at them with a fair argument, and with the statutes in his bag, so that he can explain to them the conditions of the case, they are with him. I take it that ninety times out of one hundred, the health board will be with the health officer. With that support, we will succeed. Where else can we better look than to those men known for years as the health officer of the town for support. I do not say that proper men are always chosen to fill those positions on those boards. But if the health officer approaches the matter fairly, he is doubly armed for the fight. Don't do away with the health board.

DR. J. W. KING—I have been a health officer more or less for a number of years, and I was pleased when I heard Dr. Leary's paper presented. There is, as you all know, much with which anybody will differ in anything. It would seem to me that one thing that might be taught to the people, is that quarantine: that when we say "scarlet fever is there" that there might be perhaps some circular which we could hand in to them about such diseases. That would save a great deal of time and discussion with the family, as to how long they were going to be kept in quarantine if they had a mild case of any communicable disease. That is one thought.

There is another thing which should be imposed upon the health officer, and not be optional with him, and that is the obligatory condition by which he should report when he knows there is an infraction of the law on the part of those who are quarantined.

When the people know it is obligatory upon him, and he would be fined if he did not do it, then they would not accuse him of being mean to this or to that particular family. Suppose a complaint could be reported to the clerk of the board, and it would be compulsory on the clerk to call the board together, so that means should be taken to properly control the situation, and by fine, punish the breakers of the quarantine. That would seem to cover it.

DR. CARR—I was very much interested in the discussion this afternoon, of Dr. Leary's paper, but we are losing sight of what seems very important, and that is, the education of our people, and the co-operation of our associate physicians. That is where the trouble pinches in this question of reporting cases and quarantining and carrying out a great many unpleasant things. I find that some of the physicians say: You will have to be quarantined, but it is only for a few days, and then the quarantine can be removed. You all understand what that means when a case is to be quarantined for two or three weeks, or possibly four weeks. The family feels you

are maintaining a quarantine where it is not necessary because their physician has told them so. Let us see that our associate physicians are dealt with fairly, so that they will not handicap the health officer, and also have them work with you in educating the laity into the conditions surrounding you. Then we will have a more uniform condition and easier work for those caring for the health and welfare of a community. Education and co-operation, Mr. Chairman, seem to be the important point.

DR. COLE — Two ideas have occurred to me out of the discussion this afternoon. One gentleman has asked a question which has not been answered. I am not going to answer it. I am not learned in the law, and I doubt if there are any of us here who want to answer a question of that character off-hand. But as I have charge of the Municipal Bulletin of the State Department of Health, I want to say it is our desire to open in the Monthly Bulletin a page or more, if necessary, for the answering of just such questions as are proposed. And I will ask that every health officer with a complaint shall put it in the form of a letter to the Department, addressed to the Commissioner or to the editor of the Bulletin. I will see that it is answered in the Bulletin, and that answer will be of value to him and to other health officers in the State who wish to get the same information which he wants.

Another health officer has suggested that the Department should issue a circular upon some particular topic which he would be glad to distribute among the particular people in his community. I want to say that I hope every officer who can make a suggestion will write it to the Department. We want to issue a series of these pamphlets, which will be of benefit to you in your work, and if you will be so good as to tell us all topics which will be of advantage to you in your particular field, we will be glad to take them up, as far as our means will allow.

THE CHAIRMAN — We are fortunate in having with us the father of the State Rural Bacteriological Laboratory in the United States. That is a fact. The next speaker is the father of State Rural Bacteriological Laboratory in the United States, and I am more than pleased to have with us Dr. Hallenbeck, who has had several years of practical, useful experience of that kind in Ontario county.

COUNTY SANITARY ORGANIZATION

BY O. J. HALLENBECK, M.D.

Health Officer, Canandaigua

About six weeks ago I received a letter from Dr. Porter saying that I was to read a paper on the subject of "County Sanitary Organizations." There was nothing to do but to obey. I do not wonder why he asked me to write on this subject, as I understand he has been plied with many questions in regard to the county laboratory and to the county sanitary association. Here is a sample of an inquiry we received from an interested party last week. This is addressed to the Bacteriological Laboratory in Canandaigua:

" Dear Doctor:

SIR:— I cannot attend the meeting in Rochester in November. Dr. Floyd Palmer, health officer, who is also interested in county laboratories will be present, and I will call his attention to that portion of the program indicated.

In talking over the matter to our people, I have been asked to show the results in some county where the laboratory has been established. The majority of the people here do not appreciate work of this kind, and it is rather hard to get started."

Now, the way we got started was to start. It was during an epidemic of diphtheria in the winter of 1905-6 at the Ontario County Orphan Asylum that I became especially impressed with the inadequate means at our disposal of waging war against the enemy. The State Department at Albany was ready and willing to give us the bacteriological examinations of those cases that came within its jurisdiction, but our base of information was too remote to give us in time that scientific information which was due us both as physicians and patients. This epidemic was stubborn and expensive. I became convinced that a bacteriological laboratory and a competent bacteriologist near at hand would be potent factors in subduing the epidemic. I studied the problem also from a financial point of view, and I became convinced that if every county in the State had its own bacteriological laboratory, and used it

only in diagnosing diphtheria, tuberculosis and typhoid fever, it would be a profitable investment for its taxpayers. The citizens of the county are the beneficiaries, therefore the expense should be borne by them, through their board of supervisors. Gentlemen, you are the ones who are to educate the people in these matters.

Are we leaders or are we being lead? Are we being pushed along by the demands of the age in which we live, grasping only at the thorns that are thrust at us, prodding us on to duty, or are we vigilant and far sighted to anticipate the necessities that are in the not far distant horizon? The position of health officer is a position of opportunities. By virtue of the office which is held by him, he is frequently called upon to discharge duties that are not agreeable, but are of vital importance. Questions bearing on the liberties and the rights of people have frequently to be decided at once. To err in judgment may be to permit an epidemic to spread, or on the other hand to quarantine unnecessarily. When personal rights are interfered with, or changes are directed involving a monetary consideration, the health officer is often strenuously antagonized, although an epidemic may be averted or an insanitary condition remedied, much to the benefit of the party interested.

Good, mature judgment, together with the executive ability to carry out the conclusions arrived at, are the prime requisites of a successful health officer. Since we have so many different and difficult duties to perform, where so many parties are vitally interested, even to the extent at times of depriving them of their liberty, confiscating their property, or compelling them to expend money to abate a nuisance, we would be stronger officials if we could be schooled by the views and experiences of our co-laborers.

In order that this course of reasoning might be carried out to fruition, two things it seemed were necessary, viz.: We must have a County Sanitary Association, and a county bacteriologist. Ways and means were instituted to effect the former organization.

The matter was first brought up before the Society of Physicians of the village of Canandaigua in January, 1906, and also before the quarterly meeting of the Ontario County Medical Society in the latter part of the same month. The propositions were

fully and thoroughly discussed and approved. A committee from each society was appointed to proceed on the plans discussed.

A letter was sent to each of the nineteen health officers of the county to meet in Canandaigua, March 4, 1906, to organize a county sanitary association. At this meeting we did organize, adopt a constitution and by-laws and elect officers.

At the February session of the board of supervisors the committees were given a hearing. We were there in full force with our plans definitely mapped out on paper. We illustrated by individual cases where time and expense would often be saved by knowing when and how long to quarantine, as well as being of inestimable value to us in preventing the spread of many diseases. To know that good and wholesome milk and water are furnished to a community; to know that diphtheria is not tonsilitis; to know that tuberculosis is not bronchitis; to know that typhoid fever is not remittent fever or some infection; to know that malignant growths are not benignant, etc., can be positively known only when we have the information made known to us by a bacteriological examination. We emphasized the fact that the greatest asset to any community is good health. We assured the board of supervisors that we would build and equip a laboratory, if they would at least pay \$1,500 annually for the salary of a bacteriologist.

We explained to them that this laboratory was for the benefit of the citizens of Ontario county, and the services of the bacteriologist would be free to them in all matters pertaining to the public health. When the individual alone is the one interested or benefited a small fee would be charged. For all examinations and analyses made for parties outside of the county, a charge would be made. This income was to be paid monthly to the county treasurer, and would be the fund to maintain the running expenses of the laboratory.

We also explained to them the fact that the county sanitary association as organized, would hold meetings quarterly at which times papers would be read and discussed that pertain more particularly to educate the people in sanitary matters and wholesome living. That we would encourage the public to attend the meetings, in order that they may be educated with respect to

the nature and prevention of disease. That our constitution provides that the executive committee from this association shall have general supervision of the bacteriologist and the laboratory. It would recommend to the board of supervisors a bacteriologist for their appointment. It would inspect the laboratory from time to time and acquaint itself as to the quality and quantity of work done and judge as to the competency or incompetency of the bacteriologist. It would require him to make reports to the board at such times as it ordered, etc.

During this session the vote was taken, to provide the salary for a bacteriologist, which was unanimously carried, if the county sanitary association would carry out the plans outlined.

In short, we now have a county sanitary association which meets quarterly, at which time one or more papers are read and discussed that pertain more especially to contagious and infectious diseases, hygiene and sanitation. Every health officer of the county is a member of the association by virtue of his office, and physicians may become honorary members by paying \$1 annual dues. The dues for each health officer's district is \$1 payable by the health board, through its health officer.

Our laboratory is a one-story building, built of wood on a Medina stone foundation, size 12 by 20 feet, and located on the grounds of the Memorial Hospital building. It is heated by steam, lighted by electricity, supplied with gas, hot and cold water, equipped with incubator, sterilizer, section cutter, microscope, etc., and other modern paraphernalia that goes to make complete a first class bacteriological and pathological laboratory.

The building cost about \$1,000 and the cost of the equipment about \$400.

I append to this paper the third annual report of the bacteriologist to the board of supervisors, as a summary of our work for the past year.

THIRD ANNUAL REPORT OF THE ONTARIO COUNTY LABORATORY

CANANDAIGUA, N. Y., *October, 1, 1909.*

To the Honorable the Board of Supervisors of Ontario County:

GENTLEMEN:—I have the honor of submitting to your honorable body, the following report of the Ontario County Laboratory for the year ending September 30, 1909.

Building Equipment and Supplies

The building used as a laboratory has begun to show some signs of wear, viz: the putty has fallen away from some of the window panes, and the frames of the windows need paint. The plastering inside shows the accumulated smoke and dust of three years, and would be improved with washing. Aside from these minor particulars the building is in good repair. A new screen door should be supplied, as the one now in use is badly warped and can not be tightly closed. It will be seen from the financial report that there is sufficient money at hand to defray the expense of these repairs. There have been no additions to the permanent apparatus, and no repairs needed. Supplies of glass, chemicals, etc., have been purchased from time to time, and there is money at hand to pay all bills so incurred.

Financial

The balance to the credit of the laboratory at the last annual report was \$23.47. The receipts for the past year have been as follows:

October, 1908	\$6 20
November, 1908.	4 00
December, 1908.	12 25
January, 1909.	11 85
February, 1909.	20 00
March, 1909.	10 25
April, 1909.	14 30
May, 1909.	5 25
June, 1909.	18 25
July, 1909.	10 75
August, 1909.	19 85
September, 1909.	12 00
Total	<hr/> \$144 95

The expenses were as follows. At the February session these bills were audited and paid:

Bausch & Lomb (supplies)	\$30 50
H. I. Davenport (supplies).	16 88
Total.	<hr/> \$47 38

At the present session are presented the following bills, viz:

Bausch & Lomb (supplies)	\$20 31
H. I. Davenport (supplies).	64 75

Ont. Co. Messenger (printing)	1 75
McGrevy Sleght DeGraff Co.	5 15
Total.	<u>\$91 96</u>

Summary

Balance on hand October 1, 1908.	\$23 47
Receipts for the year.	144 95
Total.	<u>\$168 42</u>
Expenses for the year.	139 34
Balance October 1, 1909.	<u>\$29 08</u>

Accounts are due the laboratory to the amount of \$80.00 of which \$55.50 is owed by Yates Co. under our contract with them, and this amount is to be paid at their November session.

The total charges for the work done this year are \$197.25 as against \$153.95 last year, a gain of \$43.30 or a fraction over 28 per cent. The expenses on the other hand were \$2.27 above last year. Less than 2 per cent. increase.

A table is appended to this report, showing the number of specimens, the nature of such specimen, and the address of the physician sending the same. As a part of this report the complete data and finding in the instance of each specimen received are on file at the laboratory. The total number of specimens this year is 825, only a slight gain over last year. The work done for physicians outside of the county has largely increased.

Respectfully submitted,

H. I. DAVENPORT,
County Bacteriologist

Sputum tuberculosis, positive 71, negative 215.

Blood typhoid, positive 40, negative 55.

Other blood examinations, 47.

Diphtheria swabs, positive 24, negative 68.

Urine, 142.

Bacteriological, 64.

Pathological, 42.

Water bacteriological, 30.

Milk bacteriological, 7.

Milk chemical, 3.

Faeces, 4.
Chemical, 4.
Stomach contents, 4.
Unclassified, 3.
Total, 825.

DR. BRYAN — I will not be able to discuss this paper, as my voice will not permit me.

DR. MAGILL — *Mr. President, Ladies and Gentlemen:* I was delighted to hear the paper of Dr. Hallenbeck. My short acquaintance with Dr. Hallenbeck dates back only to a very enthusiastic affair which we once attended. I think he is an ideal health officer because he is an optimist. I want you to know you have not heard anything from Dr. Hallenbeck about his difficulties. He has showed you how to do things. The observation of my life has been to see how men do things, and the men that I admire are the men that do things. I admire the German organization, where I have been trained, and the French organization where I have been trained, because of its military power. Every inhabitant of those nations is trained to efficiency and discipline—you have the order and you do it. It seems to me that the accomplishment of the order is an exceedingly simple thing. It accomplishes results and clears your conscience.

Now, on this laboratory question, the first question I asked Dr. Hallenbeck was: "How did you organize your county laboratories, and how many county laboratories have you in the State?" I think I am correct in saying there are three or four county laboratories in this State now. Dr. Bryan reports the spreading of that thing in his county at this time. I have been encouraged to have inquiries coming into the State Department asking how to start a county laboratory, and I would like to ask every health officer: What have you done to secure a laboratory in your county, and what are you going to do? I think every health officer realizes the great assistance to him in his work of such a laboratory. The trouble is they are not all gifted with this genius for organization, and he has come to show you how to do it. I do not think any county laboratory in this State is free from Dr. Hallenbeck's contact. And, as Dr. Hallenbeck has been here and told you how to do it, I hope every county will secure a county laboratory during the course of this year.

THE CHAIRMAN — We will listen now to five minutes' discussion of Dr. Hallenbeck's paper.

DR. W. G. FISH — We heard from Prof. Ogden sometime to-day of the laboratory at Cornell University for his section of the State and, if I am not mistaken, Prof. Ogden said the Department was to use this laboratory as a starter for other laboratories in other sections of the State; are we not going to duplicate unnecessarily if we have county laboratories, too?

THE CHAIRMAN — Dr. Hallenbeck will answer that.

DR. HALLENBECK — We are now in the preventive stage of medicine. Now it is up to us to prevent disease, and that is what this laboratory is for. We are getting off too far if we go to Cornell for our information. To illustrate, we had one case which came to our laboratory, a school teacher that was sick, and the doctor reported "sore throat," and she was up and around. We took a culture in the morning, and at night the result was announced from the laboratory, she had diphtheria. The family did not think we were correct. I was going to take her to a hospital and quarantine the house, when she went to a hospital, and in less than ten days she died of diphtheria. Suppose we had let that case go without quarantine. You take those chances. The only way to get at those things is to get at them correctly.

DR. MAGILL — The laboratory alluded to by Prof. Ogden is merely a portion brought for special study. At the present time that is only equipped for water supply tests, and the hope Prof. Ogden held out was that they would fill the need of that locality. But the real object of this laboratory is to start out the particular work of the State and not to answer the needs which the county laboratory fulfilled.

THE CHAIRMAN — Are there any other questions, or is there any other discussion?

DR. CARR — I am within ten miles of Cornell University, and last year we had a small epidemic of diphtheria and I took cultures from those throats, and I could not wait for results from Albany. The epidemic started from two or three cases. The physician said: "You had better report these to the health officer." I went there and took the cultures and, instead of waiting for Albany, I sent them to Cornell University, and I got results by telephone in the afternoon. That shows you the advisability of having your laboratory near at hand.

THE CHAIRMAN — I will ask what Dr. Hallenbeck can tell us about Ontario county?

DR. HALLENBECK — We have a tuberculosis hospital plan; the plans were submitted once to the board of supervisors, and the board of supervisors has had an estimate made by the architect, but the price was too high and it was resubmitted.

I have not very much doubt that this is the result of the sanitary organization of the county. I do not believe it would have been brought about as readily as this if we had not had this organization. You know, if you have a reason and you can show your people that you have something for their benefit, and you are a unit, you can carry almost anything.

Our board of supervisors said: "We will give you \$15,000 for your hospital." A site has been selected and paid for and we expect to have the building ready in the spring. You cannot afford to stand alone. Get all the health officers of your county around you and work together.

THE CHAIRMAN — I declare this meeting formally closed until 10 o'clock tomorrow morning.

FRIDAY, NOVEMBER 12

FIFTH SESSION, 10 A. M.

Presiding: COMMISSIONER EUGENE H. PORTER.

THE CHAIRMAN — I take great pleasure in introducing to you Surgeon-General Walter A. Wyman, of the United States Public Health and Marine Hospital Service, who I am sure will present the subject which he has chosen in a most interesting and instructive way.

SURGEON-GENERAL WALTER A. WYMAN — *Mr. President, Ladies and Gentlemen:* In the course of my remarks I am going to refer to the hygienic laboratory of the Public Health and Marine Hospital Service, and also the Leprosy Station on the Island of Molokai in the Hawaiian Islands. In order that you may understand what I have to say about these two institutions I will pass these photographs around, and request that the last to receive them will return them to the secretary.

In dealing with this subject I have concluded that I could find no better way of giving the desired information than to simply give a review of the work of the Public Health and Marine Hospital Service for one year — last year.

The matter which I have prepared for you has never been published, and it is entirely new and I hope it may interest you. I may seem a little dull in rehearsing this, and yet it seems to me every topic touched upon must be of interest to the members of this association. In describing what we have done also, it will give to you an idea of how it is done, and the operations and the law under which the Public Health and Marine Hospital Service carries on its work.

I first deal with the subject of plague in California and on the Pacific coast, which for the past two or three years has been a very vital matter with us. You will remember in 1900 there was an outbreak of plague, and a number of deaths therefrom in San Francisco, and the Public Health and Marine Hospital Service was called upon to assist, and finally the plague was thought to be eradicated, but after the great fire in San Francisco, and the earthquake, it broke out again, and we were called upon to resume the full charge of its suppression, the State and local authorities rendering their valuable aid. We have been successful in eliminating the plague from the city of San Francisco, but the work is still going on, as the work is the most difficult of any type of diseases to root out. You may go for months and months without a case, and it will require years more of constant work taking away rats, and now and then catching an affected one, and now and then a ground squirrel, before we can be assured that the plague has been eradicated.

During the last year there was but one case of rat plague, and that was in October, 1908.

WHAT THE FEDERAL GOVERNMENT IS DOING FOR PUBLIC HEALTH

BY WALTER A. WYMAN, M.D.

Surgeon-General, U. S. Public Health and Marine Hospital Service

In considering the subject assigned to me on the program I know of no better way of treating it than by describing the activities of the Public Health and Marine Hospital Service during the past year. I have prepared, therefore, a summary of transactions which will not only show the work that has been done, but will give an idea of the field covered and methods of operation.

First, with regard to bubonic plague on the Pacific coast. You will remember that in 1900 plague was announced in San Francisco, and that for four successive years the service and the State and local health authorities were engaged in its elimination. There were in that period 119 cases and 113 deaths. Examination of rats continued for quite a long period after the cessation of the disease among human beings, and finally operations were brought to a close; but following the earthquake and fire in San Francisco in 1906, cases of plague began to be reported. A fatal case of human plague was reported in San Francisco in May, 1907, and an active anti-plague campaign was begun at once, and has continued to the present time. To June 30, 1908, there were in that city 159 cases of human plague, with 77 deaths.

During the fiscal year 1909 no further cases of human plague occurred in San Francisco, and but four cases of rat plague, the last occurring October 23, 1908.

The operations of the service in San Francisco included the inspection of 5,681 persons, investigation of 344 cases of illness, and 96 necropsies. The rats caught numbered 156,059, of which 93,558 were examined. The premises inspected numbered 365,925; buildings disinfected, 4,572; buildings made rat-proof, 846; and nuisances abated, 48,299.

The effect of this work with state and local co-operation, has been to place San Francisco in a satisfactory sanitary condition.

In Oakland, beginning with September 12, 1907, eighteen cases and twelve deaths have been reported, but no human plague has

occurred since July 17, 1908, and no rodent plague since December 1 of the same year. The number of cases of sickness investigated during the fiscal year was 170, and number of necropsies, 65. The rats caught numbered 25,889, of which 16,593 were examined, and 2 found to be infected with plague. The premises inspected numbered 2,550, and the buildings disinfected, 4,289.

At Los Angeles, on August 11, 1908, a case of human plague was reported, and shortly afterwards a ground squirrel was found with plague infection. A service officer was detailed from the hygienic laboratory to take charge of the laboratory provided by the local authorities. Between September 24, 1908, and April 12, 1909, when the medical officer was withdrawn, 13,922 animals were destroyed and examined for plague infection, including 4,722 ground squirrels and 8,977 rats. None were found infected.

In Seattle, Washington, during the fiscal year, 51,750 rats were caught, and 48,652 examined. There was no case of human plague, but 10 rats were found infected, the last one September 26, 1908. There have been in all but 3 cases of human plague discovered in Seattle since the appearance of the first case October 16, 1907, the last case occurring October 25 of the same year.

PLAGUE AMONG GROUND SQUIRRELS

In April, 1909, investigation revealed a widespread infection among ground squirrels in Contra Costa county, California. It is believed that no portion of Contra Costa county, which is some 744 square miles in extent, is free from this infection. About May 1, 1909, an organized campaign was inaugurated by the service for the destruction of these animals under the charge of a commissioned medical officer. Inspectors, foremen and laborers to the number of thirty, visit the infected ranches and with local co-operation engaged in the destruction of the squirrels by poisoning and shooting. Bulletins published by the bureau, containing all necessary information, are at the same time distributed. There have been to October 9, 34,000 squirrels destroyed, of which number 286 have been found to be infected. The warfare has been extended to adjoining counties, and an average of 300 squirrels a day are being destroyed. Four thousand, one hundred

and twenty-six ranches have thus far (October, 1909) been inspected. It will be necessary to continue this work for an indefinite period until all this plague infection has been eliminated.

PLAGUE IN OTHER COUNTRIES

Plague has markedly diminished in India. For the fiscal year 1909 there were but 168,403 cases, as against 730,729 for the previous fiscal year, and more than 1,022,000 for the fiscal year 1907.

In South America the situation remains about the same as a year ago, the disease still existing in Ecuador, Peru, Chili, Uruguay, Brazil and Venezuela. No cases were reported from Argentina. In Peru 1,192 cases with 560 deaths have been reported. In the West Indies, Trinidad was afflicted with 18 cases, 14 being fatal. The menace to the United States, therefore, still continues. Of special significance to the United States also were the outbreaks of this disease in Fayal and Terceira in the Azores Islands. Unceasing vigilance will be required in quarantine administration to prevent the further introduction of this disease. Medical officers are on duty at Guayaquil, Callao, Rio Janeiro, and La Guira, and special instructions have been issued for close quarantine surveillance and for the destruction of rats aboard vessels.

TYPHOID FEVER

Three years ago the commissioners of the District of Columbia, on account of the continued prevalence of typhoid fever in Washington, requested the Public Health and Marine Hospital Service to make an investigation to determine the cause of this continued prevalence. A board was therefore appointed, and has just completed its third report, known as Hygienic Laboratory Bulletin No. 52. The board is still investigating, and will make a fourth report, which will terminate its labors. The investigations thus far made indicate that somewhat less than 10 per cent. of the cases of typhoid fever are definitely attributed to infected milk.

The three years' study have shown that in 1906, infected milk, contact, and imported cases accounted for 30.93 per cent. of the cases for that year, 48.46 per cent. for 1907 and 46.76 per cent. for 1908. The board states that it does not seem probable that

for the seasons 1907 and 1908 Potomac water could have been directly responsible for much, if any, of the infection, and there is not yet sufficient evidence for positive conclusion as to just what part this river water has played in the causation of the disease in previous years. They call attention to the frequent neglect of disinfection of excreta, and the need of legal control of typhoid fever patients, and typhoid bacillus carriers, and the necessity in general of treating this disease as a contagious disease.

These reports have an additional value in presenting a standard method of investigating the causes of the prevalence of typhoid fever in a city, which standard has already been followed by the cities of Richmond and Pittsburg. Results obtained in the different cities from operations on the same plan become comparable and of greater practical utility.

The spread of typhoid fever through the pollution of interstate waters, particularly the Great Lakes, is an important sanitary problem, requiring Congressional legislation. The service is represented by one of its officers on the Lake Michigan Water Pollution Commission, and its advice and assistance has been requested by the Niagara Frontier Pure Water Conference.

TUBERCULOSIS

The service was adequately represented in the Sixth International Congress on Tuberculosis, at Washington, September 28 to October 5, 1908, both in the administrative and scientific work, and the exhibit.

In the laboratory the presence of the tubercle bacillus in the market milk of Washington has been demonstrated, and its thermal death point determined, (60° C. for 20 minutes). Experiments to determine whether the bacillus can be recovered from the blood of affected persons have given negative results. These studies are reported in Bulletin No. 57.

Under executive order of February 26, 1906, Departmental employees have been examined for tuberculosis and certificates given.

The service has given advisory support to the Colored Anti-tuberculosis League, established, at the suggestion of one of its officers, by the colored people of the South. A working plan,

together with the constitution and by-laws and form of membership certificate, has been published in the **Public Health Reports**, and the movement, which now embraces seven southern States, promises good results.

At Fort Stanton, New Mexico, where the service has a sanatorium for the treatment of tuberculosis cases, with a reservation of 46 square miles, 399 patients have been cared for during the year.

While, of course, it is known that the outdoor treatment anywhere is efficacious, still the climate, the altitude and dryness of air at Fort Stanton render it particularly available for the care of these cases. But there is more than a mere care of cases in the sanatorium idea. The patients in this institution come from the merchant marine of the United States, and by being sent to Fort Stanton are removed from the forecastle and boarding houses and hospitals where they would undoubtedly infect others.

While great care is exercised in stating that patients are positively cured, we have had undoubted evidence to that effect, as illustrated by the following: Sometime ago two patients who had been discharged as absolutely cured from Fort Stanton were admitted, one in the Marine Hospital at Boston, and the other at the Marine Hospital at Chicago, for diseases entirely distinct from tuberculosis, and from which they died. The medical officers knowing that they had been discharged as absolutely cured of tuberculosis were careful in the post-mortem examinations, and found that there was absolutely no active pathological condition in the lungs. The healing had been complete.

RABIES

An investigation has been made to determine the prevalence of rabies in the United States, and its geographical distribution.

During the calendar year 1908, there were 111 deaths from this disease and 534 infected localities, as shown by reports of rabies among animals. The disease prevailed in 36 States and Territories and the District of Columbia in the eastern three-fourths of the United States. No cases were reported from the Rocky Mountain and Pacific Coast regions.

During the fiscal year the Pasteur treatment was administered to 130 persons at the Hygienic Laboratory. The "fixed virus" there prepared was furnished from time to time for use in the canal zone, and was sent to the health officers of several States. A bulletin on rabies, giving the results of these investigations and operations, has been published.

PELLAGRA

Pellagra, a disease which has prevailed in certain parts of Europe for more than a century, has recently been reported from various parts of the country, notably the southern States. Its apparent increase and severity and its suspected relationship to diseased corn, make it a matter of great concern and economic importance.

A year and a half ago, recognizing that this disease was to become one of national importance, a special officer was detailed for this investigation, giving his whole time to this one disease alone, and four bulletins prepared by him on the subject have been published by the bureau, and statistical information is being obtained. Within the past month, the investigation has been broadened by the appointment, with the approval of the Secretary of the Treasury, of a special commission for the investigation of pellagra, this commission consisting of seven members, five of whom are connected with the Hygienic Laboratory of the service, and two connected with the large government hospital for the insane, St. Elizabeth's, at Washington. Insanity being a frequent accompaniment of this disease, the superintendent of St. Elizabeth's was appointed on the commission, and also one of his assistants, especially noted as an expert in nerve pathology.

HOOKWORM DISEASE

Four pamphlets upon the subject of hookworm disease have been published, and an officer, who has specially investigated this disease, has been detailed to address several public health and medical associations on the subject.

Failure of requested legislation has prevented a campaign of education in conjunction with the State boards of health, which had been contemplated.

A report on hookworm disease in its relation to child labor, requested by the Secretary of the Department of Commerce and Labor, has recently been completed. This report was prepared by Dr. Ch. Wardell Stiles, Chief of the Division of Zoology, of the Hygienic Laboratory. His conclusions on the subject of child labor in the South are not in harmony with those popularly entertained. He is of the opinion that this subject involves questions which give to it an aspect quite different from that of child labor in the North, and his conclusions can best be summarized by his statement that if he had to choose between placing his own ten-year-old daughter in the spinning room of a cotton mill and placing her on the average small tenant farm of the South, he would be obliged in the best interest of the child to send her to the mill. In 1902, when Dr. Stiles pointed out the widespread prevalence of hookworm disease in the South, his views were regarded by some as extreme, but to-day it is generally admitted that those views were correct, and there are gratifying indications of a popular awakening of public sentiment which will eventually lead to an improvement in the sanitary conditions.

During the present fiscal year, Dr. Stiles has inspected 26 factories in New England, including 16 cotton mills and 1 knitting mill, but in an examination of the 1,437 cotton mill hands seen, he has failed to find a single case of that severe type of anemia (known as cotton mill anemia), which he found in 12.6 per cent. of the cotton mill hands of the South. As the New England mills are using southern cotton, and as the mill hands are therefore breathing in the same kind of lint as the southern cotton mill hands, these observations give an additional proof of the error of the popular idea that the condition of the latter mill hands is due to the breathing in of lint. Such an array of data is now on hand, not in harmony with the lint theory, that when all facts are published, he believes public opinion on this theory will of necessity undergo a change.

Hookworm disease is entirely due to soil pollution, and in order to awaken popular interest in the subject of soil pollution in connection with the disease, Dr. Stiles, in connection with his other duties, has been given several details to lecture on the sub-

ject. In addition, he has given twenty-five popular and technical lectures on this subject in five States, and without expense to the government.

While the eradication of hookworm disease within a State is primarily the duty of its sanitary authorities, nevertheless, on account of the widespread distribution of the disease and its baneful influence on the population of the country as a whole, the Federal Government should co-operate with State authorities, and this co-operation should include especially a widespread campaign of education regarding the measures necessary to prevent the transmission of hookworm disease and treatment of the large number of persons afflicted in different sections of the country.

The gift of a million dollars by Mr. Rockefeller, and the appointment by him of a commission for the purpose of eradicating this disease is a matter of great import. It should be remarked too, that Mr. Rockefeller's noble gift is not restricted in its use to the interest upon an endowment, but that it provides for the expenditure for five years of \$200,000 each year.

One of the members of this commission is Dr. Stiles, who has devoted himself assiduously to this subject, and who is chief of the Division of Zoology in the Hygienic Laboratory.

LEPROSY

In 1905 Congress appropriated \$100,000 for the erection of a leprosy investigation station on the island of Molokai in Hawaii. Great difficulty was experienced in erecting the buildings, on account of the difficulty in securing labor, caused by the fear of the disease. The investigations, however, were begun in the temporary laboratory in Honolulu. The station at Molokai, some 60 miles distant, is now completed and is about ready for occupancy.

The results obtained thus far in the investigations made at the receiving station in Honolulu are embodied in six reports, which have been published.

The investigation of incipient cases at Honolulu will continue even after the main station at Molokai is opened, as such cases present the best opportunity for the study of early methods of diagnosis and means of relief. Studies are being made of the

pathological anatomy of the nasal cavity in leprosy; treatment of incipient cases of leprosy with tuberculin, atoxyol, strychnine, chaulmoogra oil, and cinimate of soda; examination of the urine of lepers for acid-fast bacilli; and attempts to grow the lepra bacillus on several media.

On the other hand, experiments on animals and such other work as requires large amounts of leprous material can best be carried on at the station on Molokai, where the service has full control of the patients under its care. Both lines of investigation are of importance; each assists the other and together they form a comprehensive plan that should bring about results for which the investigation was begun.

The many problems that leprosy presents has for convenience been grouped into two classes:

The first class includes four important problems, namely, the growth of the lepra bacillus on artificial media; the successful inoculation of the lower animals; the discovery of a substance analogous to tuberculin, of use as a remedial or diagnostic agent; the discovery of the usual mechanism whereby the infection spreads from one person to another.

In the second class are included lesser problems that step by step add to our knowledge of the disease, and while not apparently of so great immediate importance, yet may indicate the path that leads to the solution of the greater problems mentioned.

The investigations inaugurated have for their primary object the solution of the greater problems mentioned, but it is realized that scientists in many lands have sought in vain for their solution, and years may elapse before success is attained.

If, however, efforts were thus confined, the station might continue its work for years without obtaining results worthy of publication, and the greatest utility to the sanitary and scientific world would not be subserved. Every effort will therefore be made to throw all possible light on different phases of the leprosy problem, and it is expected that results will be obtained from time to time that permit of positive opinions and announcements.

With a well equipped station and laboratory, an abundance of clinical material, and a well trained corps of scientific workers, it is reasonable to expect that interesting and useful knowledge bearing on leprosy will be obtained.

The service was represented by the director of this station at the Second International Congress Against Leprosy, held in Bergen, Norway, August 16-19, 1909, and his report has been published.

YELLOW FEVER

There has been no yellow fever in the United States, and a marked absence of this disease during the active quarantine season of 1909, in Cuban, Mexican, West Indian, Central and South American ports. This great improvement in the yellow fever situation is attributed to the greater attention being paid to sanitation.

Two years ago in the City of Mexico at the International Sanitary Convention of American Republics, Doctor Liceaga, the distinguished president of the Superior Board of Health, made the astonishing claim that they had eliminated yellow fever from the Republic of Mexico. It made somewhat of a sensation, and of course something akin to a small interrogation point arose in the minds of some of us, but we listened with respect, for we knew what they had done; and I want to say that since that date, and especially during the last summer, the results have really justified that statement. When you think that only a few years ago Vera Cruz was one of the worst infected ports on the western continent; that it was a constant menace to the United States; and that now, through the scientific and sanitary efforts of the Mexican government, inaugurated by Doctor Liceaga and backed up by President Diaz, it is free from that infection, I think you will all agree that the present status is a remarkable evidence of the intelligence and energy of our southern neighbors.

Not only did Doctor Liceaga say that he felt they had eliminated yellow fever from the Mexican Republic, but he said that the forces which they had been using to that end are now used against malaria, and that they expected to eliminate malaria from the Mexican Republic. Gentlemen, that is not only a work, an ambition and an expectation that is worthy of commendation, but it is something that should stimulate us. I believe they have given more attention to the destruction of the mosquito and the elimination of malaria and yellow fever than we have in this country, and we really can listen to them in this respect. The past year has been

one comparatively free from yellow fever in other countries as well, but it is due, I believe, to the increased attention that is being paid to sanitation all along the Spanish Main and the South and Central American Republics. Yellow fever is practically eliminated from Rio Janeiro. This is not a haphazard result, but is due to sanitary measures. Of course, we know about Cuba and the Canal Zone, and without doubt the honest and effective work in these two countries has had a marked effect by example. Then, too, the presence of medical officers of the Public Health Service, detailed in some eight or ten of the fruit ports in Central and South America, to make sure that the ships shall be free from infection before leaving, has had a sanitary influence on these republics.

Whether all who are here feel a special interest in the matter of yellow fever or not, it is a cause for congratulation that a disease which used to sweep over this country, and infected constantly all our neighbors, appears now to be practically wiped out. Of course, one swallow does not make a summer, and one or two summers of freedom from general infection is not enough to make us rest content, but still it is very encouraging, and it looks very much as though we had conquered in this western hemisphere the disease called yellow fever.

CHOLERA

Cholera being prevalent in Russia, an officer was detailed in the office of the United States Consul at Libau, which is the only port in Russia from which vessels carrying emigrants sail direct for the United States. Cholera was reported in Rotterdam August 26, 1909, and an officer on duty at Naples was sent to that port to assist the Consul in enforcing the treasury regulations. The outbreak, however, was of short duration, the disease being a recent importation from Russia, and terminated about September 11th, there having been thirteen cases and five deaths. In Manila there were 981 cases, and 23,094 cases in the provinces of the Philippine islands.

SMALLPOX

In the United States, 42 States, 1 territory and the District of Columbia reported 24,650 cases of smallpox, with 75 deaths, being 6543 cases and 6 deaths less than reported for the fiscal year 1908.

During the fiscal year 1902 there were reported 55,857 cases, with 1852 deaths. Since then the number of cases and deaths has gradually diminished.

VACCINE VIRUS AND ANTITOXINS

Twenty-one establishments were licensed by the Department, ten of them being foreign, under the act approved July 1, 1902. Investigations during the year demonstrated that foot and mouth disease may be transmitted to animals through vaccine virus. An outbreak of this disease was traced to the vaccine virus of two establishments. The license of one firm, which had expired, was not renewed, and the license of the other was suspended until all infected virus had been withdrawn from the market, and the infection eradicated. The infection was due to importation from abroad, and revised regulations were therefore issued which will effectually control the importation of this product, whether intended for sale or for laboratory purposes.

HYGIENIC LABORATORY

The additions to the building, provided by Congress, and trebling its capacity, were completed during the year. Nine bulletins, containing the results of scientific investigations were issued. The total personnel of the laboratory numbers sixty.

Besides the above, the laboratory has an Advisory Board, composed of representatives of the three medical services of the government, and the Bureau of Animal Industry, and five others, representing laboratories devoted to like research. These five members are: Professor William T. Sedgwick, of the Massachusetts Institute of Technology; Professor Victor C. Vaughn, of the University of Michigan; Professor Simon Flexner, of the Rockefeller Institute for Medical Research; Professor William H. Welch, of the Johns Hopkins University, and Professor Frank Westbrook, of the University of Minnesota. Through this Advisory Board the Hygienic Laboratory is kept in touch with investigations in other laboratories, and has advice regarding investigation being made or to be made in the government institution.

RELATIONS TO THE PHARMACOPOEIA

In 1908 the board of trustees of the United States Pharmacopoeial Convention called upon the Bureau to undertake the publication of a series of bulletins embodying digests of comments on the pharmacopoeia. This work was begun in the Division of Pharmacology of the Hygienic Laboratory, and the first digest of comments was compiled and published during the fiscal year as Bulletin No. 49 of the Hygienic Laboratory. In beginning the work, it was decided to compile the material chronologically so as to present the available comments in proper sequence. The above mentioned bulletin, therefore, deals with literature of the latter half of 1905 representing the period from the publication of the Eighth decennial revision of the pharmacopoeia to December 31, 1905.

The comments contained in this bulletin are interesting and indicative of current opinions regarding the future of this work and the development of the Division of Pharmacology. In most foreign countries the pharmacopoeia is a government publication, and its preparation is purely a governmental function. For eighty-five years the pharmacopoeia of the United States has been by contrast a wholly private enterprise, compiled, developed and published by members of a voluntary organization, and attaining a legal status only gradually through the enactment of statutes by the several states which recognized its standards.

Through recent national legislation this publication has become the federal standard, and the significance and far-reaching effects of this change of status are shown by the fact that within a year some revision of the pharmacopoeia was made necessary. The problem now to be faced by the government and by the makers of the pharmacopoeia is, what shall be the attitude of each to the other with reference to what has been termed "a sanitary institution of the first rank."

It is gratifying that the work already done by the government has been welcomed and accepted as evidence that the relation of the Federal Government to the Pharmacopoeial Convention is to be that of co-operation without domination.

The first volume of digests already published has been accepted by those interested as an expression of governmental interest in a

volume of national consequence, and that such interest is second only to the legislative action making it the official standard in this country.

A second digest of comments on the pharmacopoeia has been prepared and submitted for publication as Bulletin 58 of the Hygienic Laboratory. This second bulletin covers the literature for the calendar year ended December 31, 1906. This period was one of unusual interest and activity in matters relating to the pharmacopoeia of the United States.

The enactment of the Food and Drug Act, June 30, 1906, and the signing, November 29, 1906, of an agreement by the United States and other powers for the unification of the pharmacopoeial formulas for potent drugs make the pharmacopoeia a legal standard for the development of which in part at least, the government has incurred treaty obligations.

Since the Pharmacopoeia of the United States and the National Formulary have become legal standards, the medicaments to be incorporated require careful study and the collection of disinterested information. This is necessary inasmuch as not only powerful financial interests but the maintenance of the public health are involved. In accordance with a resolution adopted by the American Pharmaceutical Association, the second digest of comments that has been prepared relates also to the National Formulary.

Besides the compiling and publication of a series of comments there is also a great deal of important work to be done in relation to the remedies to be incorporated in the pharmacopoeia, and the chairman of the Revision Committee has advocated the carrying on of such work in a government proving laboratory. The necessary test for the identity and purity of official remedies should be elaborated by workers who are free from the stress of commercial self-interest and competition, and such work can be carried on in the Hygienic Laboratory where the methods of making official preparations of official drugs and the standardizing of such preparations when so made should also be done.

Much work has been carried on in the Division of Pharmacology in relation to therapeutic remedies. In view of the coming Pharmaceutical Convention, the Chairman of Revision, requested

that some additional work be undertaken on the determination of melting points and boiling points in the pharmacopœia. He pointed out that the melting point and boiling point of the various substances contained in the present pharmacopœia had not all been determined by the same method, and that chemists and physicists were not united on the best and simplest means of determining these factors. He stated that there was necessity for uniform method of taking the melting point and boiling point, and requested that tests be made, and comparative tables be prepared for use in the next revision of the pharmacopœia. It was decided, with the approval of the Secretary of the Treasury, to undertake this work, and investigations are now in progress with the view to the determination of the physical constants of pharmacopœial substances, which include boiling point, melting point and solubilities.

The results of investigations into the relation of the iodine content to the physiologic activity of thyroid preparations, the physiological standardization of suprarenal preparations, and such drugs as digitalis, the toxicity of acetanilid mixture, and the standardization of antitetanic serum, which have been published, will be of value to members of the Pharmaceutical Convention.

Closely related to the work of the service in connection with the United States Pharmacopœia is its co-operation with the American Medical Association in the work of the Council on Pharmacology and Chemistry, four of whose members are government officials, two of them in the Division of Pharmacology. In addition to the routine work carried on in connection with the Council with reference to the general question of new remedies, it has been shown in the Division of Pharmacology that digitalin, a preparation of world-wide use, under certain conditions becomes inert. There has also been demonstrated the variability of the extremely potent suprarenal preparations. Many unofficial drugs which have been used to a greater or lesser extent, some of them official at one time or another, are being studied with a view to determining whether they are of sufficient merit to justify therapeutic use.

SANITARY CONFERENCES AND ADVISORY BOARD

The Seventh Annual Conference of State and Territorial Health Officers with the Public Health and Marine-Hospital Service was

held in Washington, June 2 and 3, 1909. Twenty-six States and Territories and the District of Columbia were represented. The discussions illustrated the value of this official organization.

The Advisory Board of the Hygienic Laboratory was convened on March 26, 1909. Investigations conducted in the laboratory were discussed, and the advice of the board obtained with regard to the continuation of the same and new investigations.

The United States Government has been represented in the International Office of Hygiene at Paris by the detail, of Surgeon H. D. Geddings. Dr. Geddings is stationed now at Naples, Italy, supervising the medical inspection of emigrants leaving that port, and signing bills of health. It is so arranged that when occasion demands he can attend the meetings and represent this government at the International Office of Hygiene in Paris. The service has also maintained its interest in the International Sanitary Bureau of the American Republics in Washington, and through a resolution passed by each body, this bureau was brought into relations with the Office of Hygiene in Paris.

The Twelfth International Congress on Alcoholism was held in London, July 18 to 24, 1909. The congress was well attended, there being about 1,400 members, and practically all civilized countries being officially represented. Among the speakers were members of Parliament, prominent lawyers, including the Lord Chief Justice, officers of the English navy and army, including the Surgeon-General, railway officials, teachers, clergymen and others.

Dr. Reid Hunt, chief of the division of pharmacology, in his report of the meeting states that it seemed to be the consensus of opinion that alcohol in any form is but seldom of distinct value in the treatment of disease, also that some evidence was brought forward to show that alcohol even in moderate amounts has an unfavorable effect upon subsequent offspring and a tendency to lower resistance to infection. The dangers of alcohol to those with any tendency to nervous or mental diseases was especially emphasized as were also the effects upon children.

Statistics were presented showing that there has been a marked decrease in the use of alcohol in hospitals. The statement was also made that the only pharmacopoeias which included whisky were those of the United States and Greece and it was suggested

that its recognition in this way gave it an undue prominence as a medicinal agent.

Another point brought out was the extraordinary growth of total abstinence in the British army and navy. Forty per cent. of the army in India are said to be total abstainers. The surgeon-general of the British army attributes this growth of total abstinence to the improvements that have been made in the housing and feeding of the soldiers.

The congress was held under the auspices of the British government. The next meeting will be at The Hague in 1911.

NATIONAL QUARANTINE

At the forty-four quarantine stations in the continental United States, 8,266 vessels were inspected, of which 520 were disinfected. Inspection has been maintained on the Mexican border.

National quarantine has been administered at seven ports in the Philippine Islands, seven in Hawaii, and eight in Porto Rico.

Medical officers have been stationed at eight fruit ports in Central America to enforce special regulations relating to fruit vessels to permit their entry into the United States without detention.

Details have also been made to ports in Cuba, Mexico, Barbadoes and St. Thomas, to Rio De Janeiro, Callao, Guayaquil, Naples, Calcutta, and to two ports in China and three in Japan. The officers have exercised quarantine supervision over vessels bound for the United States, and at a number of foreign ports have examined aliens by request of the immigration bureau and steamship companies. By request of the Venezuelan authorities, on account of the bubonic plague, an officer was detailed for duty at La Guaira; one also for immigration and quarantine service at Amoy, China, by request of the United States consul, with special reference to the protection of the Philippines.

In view of the establishment of a new line of steamers, plying from Salina Cruz and Manzanillo, on the Mexican-Pacific coast, direct to Honolulu, officers were appointed for the disinfection of vessels at the two Mexican ports named to prevent the introduction of yellow fever into the Hawaiian Islands, where this disease is at present unknown, but where the conditions are ripe for its spread should it be introduced.

MEDICAL INSPECTION OF IMMIGRANTS

During the fiscal year 966,124 immigrants were inspected under the immigration laws and regulations, and 14,536 were certified for rejection on account of physical and mental defects. The inspections were conducted at fifty-eight stations in the continental United States, Canada, Porto Rico and Hawaii, but do not include the examinations in the Philippines or at foreign ports. Personal examinations were made of 965 aliens reported as public charges in various institutions throughout the United States to ascertain whether they should be deported under the immigration laws.

Service officers have also, under the supervision of the Commissioner-General of Immigration, conducted the large hospital for immigrants at Ellis Island, where 6,186 patients were admitted for treatment.

SERVICE PUBLICATIONS

During the year 246,060 copies of the various publications edited in the bureau were distributed. These include the Annual Report, the Weekly Public Health Reports, the Bulletins of the Hygienic Laboratory, and various special bulletins relating to the public health. A new edition of the Bulletin entitled "Milk and Its Relation to the Public Health" has been published.

MARINE HOSPITALS AND RELIEF

In the twenty-one marine hospitals owned by the government, and at the 126 other stations where seamen of the merchant marine receive hospital and dispensary treatment, there were treated during the fiscal year 53,074 patients, of which number 14,209 were treated in hospital, and 38,865 at the dispensaries. The new marine hospital at Buffalo, N. Y., has been completed, and is occupied.

Physical examinations, exclusive of immigrants, were made of 4,980 persons connected with the revenue cutter, life-saving, steamboat inspection, immigration and light house services, the Coast and Geodetic Survey, Civil Service Commission, Isthmian Canal Commission, and Philippine service.

PERSONNEL

At the close of the fiscal year there were 128 commissioned medical officers, namely: The surgeon-general, five assistant surgeons-general, thirty-five surgeons, sixty-six passed assistant surgeons, and twenty-one assistant surgeons.

There were also 279 acting assistant surgeons,— a total of 407 medical officers.

There were also forty-five pharmacists.

Commissioned medical officers have served on special duty during the year as follows: Three have served with the Isthmian Canal Commission, respectively as director of hospitals, ¹chief quarantine officer and in charge of the quarantine at Panama, and quarantine officer at Colon.

Two officers have been continued as chief quarantine officer and director of health, and as assistant director of health, of the Philippine Islands, respectively.

One officer, under the act of February 15, 1893, has been continued for duty at Guayaquil, Ecuador.

Fourteen officers are assigned to exclusive immigration duty for the physical and mental examination of aliens, their services being supplemented by employment of acting assistant surgeons.

Six officers are detailed to the quarantine service of the Philippine Islands.

Seven officers are detailed for service upon vessels of the revenue cutter service.

Twenty-three officers are detailed at the several quarantine stations in the continental United States, in Porto Rico, and the Hawaiian Islands.

One surgeon, four passed assistant surgeons, and one assistant surgeon, are assigned to duty in foreign countries to prevent the introduction into the United States of epidemic disease.

One commissioned officer detailed in the office of the United States consul at Guayaquil, Ecuador, died of yellow fever while in the performance of his duty.

CONCLUSION

I have thus endeavored to give you an idea of the scope and character of the work of the Public Health and Marine Hospital

Service. My subject does not call for any comment upon the public health system or organizations of the United States, nor would there be time to discuss the same, but I wish to impress one thought upon you and that is that in the division of public health work in the United States,— national, State, municipal and county,— the relative importance of the work of the county health officers and the local physicians cannot be over-estimated. You gentlemen are the ones who are familiar with the local conditions which aid in the propagation of disease, and are the first ones to become acquainted with the existence of contagious or infectious diseases. You are, therefore, the first units in the nation's sanitary organization. The large attendance at this convention, the papers read, and the interest exhibited in the discussion, all give evidence of the vitality of your association. Your State Health Commissioner, Dr. Porter, attends the annual conference of the State boards with the Public Health and Marine Hospital Service, and through him and the secretary of your State Department of Health, Mr. Seymour, we have become acquainted with your energy and excellent organization; and in closing I have to wish you the greatest success in the work of your organization and in achieving your laudable aspirations.

CHAIRMAN D. S. BURR — We receive every week a bulletin giving the contagious diseases of every sort. It is a wonderful piece of work. From the early days it has grown and taken into account all kinds of contagious diseases, and it also gives the death rates. You of the towns may not know of this, but we of the cities know what is being done by the Public Health and Marine Hospital Service under the direction of Surgeon-General Wyman. I should like to record a vote of thanks to Surgeon-General Wyman for his very interesting and instructive paper.

DR. LESEUR — I move that the convention extend a vote of thanks to Surgeon-General Wyman of the Public Health and Marine Hospital Service of the United States, for his excellent paper showing the work done by that department in the past year.

THE CHAIRMAN — You have heard the question? Is there a second?
Motion seconded.

THE CHAIRMAN — Are you ready for the question? All in favor will say Aye, contrary No; it is unanimously carried, and the congress extends its thanks to you, Surgeon-General Wyman, for your paper.

SURGEON-GENERAL WYMAN — I thank you very much for this expression of your appreciation, gentlemen.

THE CHAIRMAN — An extra paper has been introduced this morning, a paper by the Inspector of the State Commission of Lunacy. It is by Dr. Russell on Care and Commitment of Insane Persons by Health Officers.

I have the pleasure of introducing Dr. William L. Russell, Medical Inspector for the State Commission in Lunacy of the State of New York.

CARE AND COMMITMENT OF INSANE PERSONS BY HEALTH OFFICERS

By WILLIAM L. RUSSELL, M.D.,

Medical Inspector for the State Commission in Lunacy

This subject is a very important one, but I promise not to take up much of your time.

A proposal to bring mental diseases within the field of work of the health officer may strike some as novel and possibly not altogether appropriate. The sphere of the health officer is, however, being steadily enlarged so as to embrace more and more of whatever relates to the public health. Why not, therefore, mental diseases? The conditions included under the general term "insanity" are now recognized to be of a character which must receive the attention of physicians, and the cases are regarded as proper subjects for medical care and treatment. These conditions resemble infectious diseases to the extent of requiring official action for the public good, and isolation of the cases. They are, too, in a great many instances, the outcome of avoidable causes, some of which are in the nature of infections. The prevalence of mental diseases in a community, or the public care and commitment of the cases is fundamentally not a question of poverty or of crime. It is a health question.

The medical view of insanity was not always so generally accepted as it is to-day, and the history of the care of the insane is a story of a long, hard struggle for its application in the practical methods of dealing with the cases. The struggle has been carried on by comparatively few physicians and philanthropists, arrayed against whom have been the forces of superstition, ignorance and selfishness, and the inertia of generally accepted views and customs. An epoch in the struggle in this State is marked by the passage of the State Care Act in 1890. This act provides that all poor and indigent insane persons in need of institutional care shall be cared for in State institutions, that private institutions for the insane shall be conducted only under State license, and that the execution of the laws relating to the care of the insane shall be under the direction of a State Commis-

sion in Lunacy. One of the most important features of the system of State care which has thus been established is the extent to which the medical view of insanity prevails in its organization and administration. The Commission in Lunacy is presided over by a physician, the superintendents of the State hospitals, and those in charge of the licensed private institutions are physicians. Nurses and sometimes physicians are sent to the various communities to bring the cases to the hospitals, and medical administration prevails throughout. More than 300 physicians are engaged in this work, about 200 of whom are employed by the State. The number of patients attended to annually is about 38,000. State care of the insane is the most extensive organized medical work that the State is engaged in, and as such is something in which the medical profession may feel a just pride and interest.

The State system is, however, organized almost entirely with reference to institutional care and to the larger State questions relating to insanity. The problem of dealing with mental disease in the community and of attending to questions relating to the commitment of individuals remains with the local authorities and is not attended to according to any uniform system nor always with regard to the medical view of insanity. Notwithstanding its important bearing on intelligent effective treatment of the cases, and on questions relating to prevention, this problem was evidently not fully worked out by the extremely able and far-seeing framers of the State Care Act. It should be remembered, however, that State care of the insane is of comparatively recent development in this country. Previous to 1850, only twenty State hospitals were in existence, and the care of the insane was, in most places, a purely local question. At that time large numbers of insane persons were confined in jails and lock-ups, in crude receptacles connected with almshouses, or, in various degrees of degradation and misery, were kept at home or allowed to roam at large. Eventually, in the more populous communities, the insane were segregated in special institutions connected with almshouses, or, in some instances, under separate medical management, and finally, in 1896, six years after the State Care Act was passed in this State, the State assumed the full responsibility. Under the earlier methods, the insane person in the com-

munity had been a subject for the constable and the poormaster, and the organizers of the system established under the State Care Act were unable to change this entirely. In 1891, the Commission in Lunacy recommended in its annual report to the Legislature that the statute be amended so as to provide for special local officers who should have preliminary charge of insane persons, and to take from the poor authorities the duties of determining the questions which relate to commitment. No change was, however, made. Briefly stated, the statutory duties of the poor authorities relating to the insane are, (1) to see "that all poor and indigent insane persons within their respective municipalities are timely granted the necessary relief conferred by" the statute, (2) to see that those who have sufficient means to support them are "properly and suitably cared for and maintained" by their relatives or guardians, or if not, that they are committed to institutions, and (3) to "take proper measures for the determination of the question of the insanity" of any person apparently insane, who may be arrested by a peace officer for "conducting himself in a manner which in a sane person would be disorderly." These duties relate practically entirely to care and treatment, to the determination of insanity, and to commitment.

The problems involved are as purely medical as the care and treatment of the insane in institutions, which by common consent the world over, have been intrusted to physicians. In the borough of Manhattan, the duties are attended to by the trustees of Bellevue and allied hospitals, and there and in Brooklyn the work has been fairly well organized under medical management. Elsewhere throughout the various towns and cities of the State the superintendents and overseers of the poor attend to it.

In Albany and in Rochester an effort has been made to provide for temporary hospital care for the cases previous to their commitment, and to have the work attended to under medical management. As a rule, however, the methods employed and the facilities provided differ little from those of twenty years ago when the distressing condition of so many insane persons cared for by the poor authorities led to the agitation which resulted in the adoption of State care.

The local poor authorities, I am sure, attend to their duties conscientiously and to the best of their ability. They are, however, laboring under the burden of the views and methods which prevailed so long under the old system, of lack of insight into the conditions from which the cases with which they are dealing suffer, and of the economy in expenditures incidental to their principal work, which is the relief of the poor. The medical needs of the cases are consequently frequently ignored, and in emergencies the only resource thought of apparently, for men and women alike, is the constable and the lock-up.

To those who see the cases after their admission to the institutions, the extent to which police methods have been employed in dealing with them in the communities seems quite unnecessary, and often extremely injurious. This question is discussed in two special reports issued by the Commission in Lunacy, which were the result of an investigation made by a committee which was appointed at a conference of representatives of the State hospitals with the Commission. These reports show that even in the borough of Manhattan, in New York city, where the work is in most respects managed well, 55 per cent. of the cases obtain hospital care only through police channels.

In the borough of Brooklyn in the same city, on the contrary, where nurses employed by the poor authorities are sent to the homes for many of the cases, the possibility of eliminating the police to a great extent is clearly demonstrated. In the rest of the State it was found that nearly 20 per cent. of the cases received at the State hospitals were found by the nurses who were sent for them, in jails, lock-ups, and other places intended only for criminals. The conditions to which some of these cases had been subjected are described in the reports referred to, and cannot be justified except on the ground that they were the inevitable outcome of an inefficient system for which no remedy had yet been found.

The cases were, in most instances, brought to the State hospitals without much difficulty by one or at most two nurses, and their behavior after admission did not indicate that the severe measures employed were unavoidable. The investigation showed also that a considerable proportion of the cases received directly from homes had there been subjected to gross neglect or ill-treatment, often for

long periods, sometimes years. Altogether, in the whole State, exclusive of Greater New York, about 35 per cent. of the cases admitted to the State hospitals in a year, or about 1,000 insane persons, had previous to their admission been confined in jails or lock-ups, or subjected to gross neglect or ill-treatment at home. Looked at with reference to disease and its proper treatment, a system that fails to protect such a large proportion of the cases from injurious experiences can hardly be considered free from defects.

With a view to remedying these defects it is proposed now to take a step toward placing mental diseases in the community on the same footing as other diseases which require official action, and to transfer from the poor authorities to the health officers the statutory duties which have been briefly outlined. These duties are practically of a medical character and will be better attended to by physicians. In New York City the work is already so well organized under hospital auspices that no change is contemplated there.

In other parts of the State the health officers are the only medical officials available, and to utilize them seems more feasible than to attempt to establish a new position as was recommended by the Commission in Lunacy in 1891. In Rochester, and possibly in other cities where the health bureau attends to the needs of the sick poor, the health officers already frequently look after insane cases. If the duties and responsibilities relating to the care and commitment of insane persons are transferred to the health officers, it will, I believe, assist in establishing in the minds of the people in general that the cases are suffering from illnesses which require the attention of physicians and nurses, and which are likely to be aggravated by the methods of the constable and the poormaster.

The tendency of the friends of an insane person is to look to physicians for aid rather than to the poor authorities. Recently in one of the large cities a number of citizens appealed to the health department on account of the presence of several insane persons in a house in the neighborhood, and the health officer took the matter up and dealt with it as he would have with any other health question. In another city a letter was received by the board of

managers of the State hospital located there, from the local health officer, who asked their co-operation to secure better facilities for the temporary care of insane persons in the city. The health officer would, when consulted, be more likely than the overseer of the poor to appreciate the nature of the case and to act promptly. This would doubtless result in earlier treatment, and conditions which lead now to severe measures in some instances would often be anticipated. Advantage would probably be more frequently taken of the provisions made by statute for admission to the State hospitals by means of the emergency commitment and by voluntary application. Consultations with the hospital physicians and the employment of State hospital nurses when necessary could no doubt be arranged for under proper conditions. I can promise for the department that an earnest effort to be helpful would be made.

Better co-operation between State and local authorities with special reference to the medical needs of the cases would do much to overcome the present difficulties. Local hospital provision is also essential. This would no doubt be more keenly realized by medical officials than it is by the poor authorities, and a strong effort would likely be made to obtain it. In this the aid of the local medical profession could be counted on. A splendid example of what can be accomplished was shown in Albany when ten years ago, according to Dr. Mosher, seven physicians succeeded in securing from the county board of supervisors the establishment of the psychopathic ward at the Albany Hospital. The Commission in Lunacy could also be confidently expected to aid in any way in its power, and it may be possible to obtain legislation that will enable the Commission to be even more helpful than it can be at present. Better hospital provision for mental cases in the communities is much needed, not only for the better care of cases whose commitment to the State hospitals is contemplated, but also for the better treatment of the psychoneuroses, of intoxications, of infection deliria, and of other conditions out of which insanity may develop.

The problem of insanity is by no means solved by the segregation of the cases in large State institutions. A more widespread intelligent interest is needed. Those who deal with the cases in the earlier stages need to have a better insight into the nature of

their disorders and into the conditions from which they arise than is at present the case. This would be a step toward more efficient treatment and cure, and should eventually assist in increasing activity and interest in prevention measures. Not less than 40 per cent. of the male admissions to the institutions for the insane are due directly to alcohol, drugs, syphilis, and the acute infectious diseases, and the better understanding of the nature of the conditions from which the cases suffer, which has been made possible by the advance in clinical psychiatry, is opening up the way toward prevention measures more and more clearly. State care has already done much for clinical psychiatry. The proposed plan for extending the application of the medical view of insanity to the official methods of dealing with insane persons in the communities is in a measure an extension of State care.

The health officers are to some extent State officials. They are also more or less organized under the leadership of the State Commissioner of Health. The foundation is thus provided for building up on a medical basis, under State auspices, a system of dealing with the whole problem of mental diseases, in a more efficient way than has ever been undertaken before. An opportunity for an extremely useful and promising field of work is offered to the health officers.

A bill has been prepared to provide for the legislation needed. In this bill ample provision has been made for compensating the health officers for the extra work and responsibility required of them, and the wish of those interested in the bill is to act in harmony with the State Commissioner of Health in safeguarding the interests of all concerned and of the other important work which the health officers are engaged in.

THE CHAIRMAN — The next paper on the program will appeal to all of us directly. It is "The Investigation of a Typhoid Epidemic," and is presented by Passed Assistant Surgeon L. L. Lumsden of the United States Public Health and Marine Hospital Service.

THE INVESTIGATION OF A TYPHOID EPIDEMIC

BY L. L. LUMSDEN,

Passed Assistant Surgeon, U. S. Public Health and Marine Hospital Service

It was with great pleasure that I accepted an invitation to present before this Conference of Sanitary Officers of New York State a paper on the subject of "The Investigation of a Typhoid Epidemic." I am keenly appreciative of the honor bestowed upon me by such an invitation, and if I bring no new thought pertaining to the epidemiology of typhoid fever, I trust that it may be of interest to some of you to hear of the typhoid situation in Washington, D. C., and the methods followed in the investigation of it by the Typhoid Fever Board of the United States Public Health and Marine Hospital Service.

IMPORTANCE OF THE TYPHOID FEVER PROBLEM IN THE UNITED STATES

Of the problems in sanitation confronting us in America to-day, the prevention of typhoid fever stands out clearly as one of the most important. The measures required to prevent the spread of this communicable disease are known, but the practical difficulties encountered in getting these known measures carried out constitute the real problem.

The widespread and continued high rate of prevalence in our country as a whole of this thoroughly preventable disease is beginning to be justly considered a national disgrace. According to the Census Report for 1900, the average typhoid death rate for the United States was 46.5 per 100,000 inhabitants. This means that in the census year, which may be taken as an average, there were about 500 cases of typhoid fever with over forty-six deaths, among every 100,000 persons composing the American nation. The total number of deaths from typhoid fever recorded in the census year 1900 was 35,379, which gave typhoid fever fourth place on the mortality list.

The American nation justly boasts of its great wealth, its wonderful natural resources, and its leadership in adventure and invention; but when we compare our typhoid fever statistics with

those of other countries, we have cause for grave contemplation. Thus the typhoid fever death rate per 100,000 inhabitants for the years 1901-1905 was in Scotland, 6.2; in Germany, 7.6; in England and Wales 11.2; in Belgium, 16.8; in Austria (1901-1904), 19.9; in Hungary, 28.3; in Italy, 35.2; while the rate in the United States during this same period was about 46 (estimated). Some of these European countries now having relatively low rates, formerly had high ones. In Prussia the typhoid death rate has been reduced in the last twenty-five years from over sixty to less than twenty per 100,000 inhabitants. The climatic conditions in some of these countries seem to be as favorable to typhoid infection as those of the United States as a whole. Therefore it appears reasonable to conclude that their decidedly lower typhoid rate is due to their better enforcement of the measures needed to prevent typhoid fever.

In the United States typhoid fever is especially prevalent in the South. According to the Census Report for 1900, the ten States which had the highest typhoid death rates (average about seventy-nine per 100,000) are all States located south of the Potomac river and east of the Mississippi river. The twenty-two States which had the lowest rates (average about twenty-four per 100,000) are all northern or western States. Some of the northern States now having relatively low rates formerly had high rates, as high or higher than those which some of the worst affected southern States have had in recent years. Massachusetts in the decade 1871-1880 had an average annual typhoid death rate of sixty-two per 100,000, while in the period 1901-1905, it was 18.2. The lowered typhoid death rates in the northern States have followed improvements in the water and milk supplies, the installation of better sewerage systems, and improvements in the general sanitary conditions.

Several factors no doubt contribute to the relatively high rate of prevalence of typhoid fever in the South, among which probably the chief are:

1. Faulty sewage disposal, incident to the relatively large rural population, and particularly, as pointed out by the investigations of Stiles,* to the relatively large percentage of negroes in the population.

* Hookworm Disease and the Negroes; Hampton Leaflets, September, 1909.

2. Climate; the long periods of warm weather, when there are additional agents for the transmission of the infection, such as flies and other insects, greater quantities of uncooked foods and drinks are consumed, and there is probably greater individual susceptibility to the infection.

Considering the number of communities in the South in which polluted water supplies have been used for long periods, it is a notable fact that there have been reported in the South no pronounced and extensive epidemics of typhoid fever caused by water-borne infection. It may be that the causative organisms in the relatively warmer river and lake waters of the South do not survive in sufficient numbers to cause pronounced epidemics. In some communities in the South, as has been shown for some in the North, water may play an important part; but judging by the limited data obtainable, it seems probable that water is a relatively less important factor in the spread of the infection in the South than it is in the North.

Not many years ago typhoid fever was regarded quite generally as being almost, if not quite, wholly a water-borne disease, and the purity of the water supply of a community was estimated from the typhoid death rate. By careful epidemiologic studies of the subject it has been learned that in some communities there may be a high typhoid death rate due largely, or even entirely, to factors other than water in the spread of the infection, and sanitarians now regard the typhoid rate of a given community as a fair measure of the sanitary intelligence exercised by that community, not only in regard to the water supply, but in regard to all other factors possibly concerned in the transmission of typhoid infection.

NATURE AND SOURCE OF THE INFECTION

In recent years the generally accepted view has been that typhoid fever is an infectious disease caused by a specific micro-organism, the typhoid bacillus. The elements of mystery remaining concern the establishment of individual susceptibility to the infection, and, in some instances, the mode of transmission of the infection. We have no idea why, in some instances, fifty or more persons will be apparently equally exposed to the infection and only one or two will have the disease. We may indulge in interesting specu-

lation as to the chances of typhoid bacilli surviving, multiplying, and causing infection when ingested by a number of persons and subjected to the very different conditions (bacterial life, etc.) existing in different alimentary canals. Pending whatever discoveries may be made in the future in regard both to susceptibility and to any as yet unknown agents there may be in the transmission of the infection, we should employ, in efforts to prevent the disease, the instruments which we have at hand and which have proved effective.

All the accumulated evidence supports the view that man is the permanent host of the parasitic organisms which cause typhoid fever, and if their multiplication in and their dissemination by the human host could be prevented these organisms would soon perish. An apparently sound belief based on epidemiological findings is that "Each and every case of typhoid fever comes somehow from some previous case." This would seem to give us the cue for preventive measures,—to destroy the infection as it leaves the bodies of infectious persons. To the inexperienced this may seem a simple formula and one easy to apply, but the practical sanitarian knows that many difficulties beset its application. The people in a given community may use water, milk and various foodstuffs obtained from a distance, and liable to contamination with the excreta of infectious persons over whom their own health officials have no jurisdiction. Many cases are not recognized or not reported until there have been many chances for the infection to have spread from them. Therefore, for the local health officer the two principal plans of action to prevent typhoid fever in his community should be the following:

1. The prevention of the spread of infection from persons in his community who harbor infection (typhoid fever patients and bacillus carriers);

2. The prevention of the introduction of infection into his community from without, through various channels, such as the water supply, the milk supply, and the general food supply.

In order to carry out a successful campaign against typhoid fever in a locality, the principal immediate sources of the infection must be known, and in order to determine these, careful epidemiologic studies are necessary.

**DIFFERENT TYPES OF TYPHOID FEVER SITUATIONS PRESENTED
FOR STUDY**

Explosive outbreaks, such as those produced by highly infected water or milk, occurring in communities previously comparatively free from the disease, present rather characteristic features, and as a rule epidemiologic studies of these will point out quite readily and definitely the source of the infection. But in communities where a high rate of prevalence of typhoid fever is maintained for years and is due to a number of different factors which vary in relative extent of operation from time to time, the problem becomes very intricate and its exact solution exceedingly difficult. Most of the larger American cities present such complex typhoid fever situations. In the large urban community the conditions of life are complex. Large numbers of all classes of people are in close association. Foodstuffs are obtained from many sources and handled by many persons. The milk supply especially comes from many sources. In some instances the water supply is obtained from a number of different sources.

In the United States the rate of prevalence of typhoid fever is higher in the rural sections than in the cities. Other things being equal, a city surrounded by and obtaining its food supplies from a section of the country in which the typhoid rate is high will have a higher typhoid rate than a city surrounded by and obtaining its food supplies from a section of the country in which the typhoid rate is low.

The explosive and pronounced outbreaks of typhoid fever have had tremendous educative value, yet the number of cases occurring in such outbreaks composes but a small part of the whole number of cases occurring in the country every year. For the majority the infection spreads insidiously from house to house, from community to community,—hands, water, milk, various foodstuffs, flies, etc., serving as agents of transmission; the primary source of infection, however, being always the carelessly disposed of dejecta from some person.

METHOD OF INVESTIGATING A TYPHOID SITUATION

Studies of all typhoid situations should be conducted along the same general lines. Hasty conclusions, based on first glance im-

pressions, should be avoided. Every factor possibly concerned in the spread of the infection should be carefully considered and investigated. As the facts are collected, one possible factor after another may be eliminated until definite conclusions may be drawn as to the principal source or sources of the infection.

During the past three years, as a member of a board of officers* detailed by the Surgeon-General of the Public Health and Marine Hospital Service to study the origin and prevalence of typhoid fever in the District of Columbia, I have been engaged in the study of a typhoid situation of the complex urban type.

I shall now endeavor to outline briefly some of the features of the typhoid fever problem in Washington, our methods of studying this problem, and some of our findings.

THE TYPHOID SITUATION IN WASHINGTON, D.C.

The high rate of prevalence of typhoid fever in the District of Columbia has long been a matter of concern to the inhabitants. Before the improvement of the public water supply in 1905, there was quite a general consensus of opinion among those who had given attention to the subject, that Washington's high typhoid rate was due to the polluted water supply obtained from the Potomac river. From time to time engineering projects to improve the quality of the water, such as the construction of subsiding basins, were recommended and carried out. Such sedimentation of the water as was accomplished, however, did not succeed in sufficiently clarifying the water, or in satisfactorily reducing the typhoid rate. Congress, therefore, acting on the advice of a number of the country's most expert sanitary engineers and sanitarians, provided for a further improvement of the water supply by means of slow sand filtration, appropriating for this purpose the sum of \$3,468,405. The filters were constructed under the supervision of officers of the Engineering Corps of the United States Army, and were completed in October, 1905. Since then the city has been supplied continuously with filtered water.

During the winter and spring months following the installation of the sand filters there was comparatively little typhoid fever in

* Surgeon M. J. Rosenau, Chairman; Passed Assistant Surgeon L. L. Lumsden; and Prof. Joseph H. Kastle, Recorder.

Washington, but early in July, 1906, there occurred a great increase in the number of cases, and the disease was properly regarded as prevailing in epidemic form. This marked increase in the prevalence of typhoid fever with the advent of summer weather corresponded with the history of the disease in many previous years. The recurrence of the disease at the usual rate, or even in excess of the usual rate, despite the improvement in the water supply, was a keen disappointment both to the medical profession and to the general public, as it had been expected and assurances had been given that sand filtration would greatly diminish the disease in Washington, as it had done in other cities. The health officer of the District found himself confronted with an unusual and difficult situation, and at his instance the Commissioners of the District of Columbia requested the Surgeon-General of the United States Public Health and Marine Hospital Service to co-operate with the health officer in making a study of the subject. In accordance with this request, the Surgeon-General detailed a board of officers to convene on July 2, 1906, for the purpose of making a thorough investigation of the typhoid fever situation in the District of Columbia.

We have now been engaged in the study of this problem for over three years. The results of our studies in 1906 and 1907 are published in Hygienic Laboratory Bulletins Nos. 35 and 44 respectively, and the results of our studies in 1908 are now in press and will be issued in a few days.

In conducting this investigation we have considered and studied every factor which we have thought could possibly have to do with the transmission of the infection of typhoid fever. The investigation has included a sanitary survey of the Potomac watershed; chemical and bacteriologic examinations of hundreds of samples of the city's water supply; a special study of the pumps, wells and springs in the District, and of bottled waters sold in Washington; inspection of the dairies, and laboratory examinations of the milk supply; inspections of the ice factories, and chemical and bacteriologic examinations of samples of the ice and of the water from which the ice was made; the making of cultures, widal tests, etc., to aid in the diagnosis of cases; examinations in the Division of Zoology of the Hygienic Laboratory of two hundred specimens of

feces from typhoid patients to determine the relation of animal parasites to susceptibility to typhoid infection; a house-to-house canvass of thirty-two city blocks, having a population of over 5,000, with a view of determining what proportion of typhoid fever in Washington is unrecognized or not reported, and also to collect data as to the sanitary condition of residences and as to the water and food supply of the general population. In making this intensive study of certain city blocks, over a thousand specimens of feces from persons in health or with illnesses not suspected to be typhoid fever were collected and examined for the presence of the typhoid bacillus. This was done with the view of determining what proportion of the population harbors and perhaps disseminates the infection without having the disease in clinically recognizable form. The bathing beach and public markets have been inspected from time to time, and the question of shellfish, fruits and vegetables in relation to the disease has been given attention. A study of house-flies as possible carriers of infection has been made and their seasonable abundance considered in connection with the seasonal prevalence of typhoid fever. An exhaustive epidemiologic study has been made of the cases reported to the health office during periods of the four years as follows: July 1 to November 1, 1906, 866 cases; May 1 to November 1, 1907, 675 cases; May 1 to November 1, 1908, 679 cases; January 1 to November 1, 1909, 670 cases; making a grand total of over 2,800 cases. The collection of the data regarding the individual cases has been done each year by the same officer (Lumsden), so that differences in findings between any two of the years we believe may be attributed to differences in the conditions, the factors of personal equation not having varied.

The data in regard to each case are obtained by a visit to the residence of the patient, and a sanitary inspection of the premises. The patient himself, or when his condition does not permit of it, some other member of the household familiar with the patient's habits, is interviewed in regard to food and drink used, direct or indirect contact with previous cases, and all other facts which can be ascertained which may throw some light on just how the infection was contracted by that individual case. In conducting such an inquiry it is necessary to exercise great care and patience and

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to avoid as much as possible the asking of leading questions; otherwise erroneous and, therefore, misleading statements may be obtained.

In this study of the cases the following blank forms have been used.

A

Typhoid case card used in 1906. All facts called for by this card were carefully investigated for each case.

United States Public Health and Marine-Hospital Service—Hygienic Laboratory

TYPHOID FEVER—CASE CARD

Name, Date of investigation, Case No.
 Age, Male or female, White or colored, Married or
 single, Probable date onset of disease, Date definite symp-
 toms, Name and address of physician,

RESIDENCE

Residence when taken sick,; from to
 Previous residences,; from to
 Subsequent residence,; from to
 Residence when infection was contracted, Number of occupants, ...
 Servants,
 White —
 Resident,
 Nonresident,
 Colored —
 Resident,
 Nonresident,
 Connected with city water system?
 Connected with city sewerage system?
 Privy? Location,
 Privy vs. well,
 Water-closets in house? Water-closets in yard?
 Screens? Flies? Mosquitoes? Ants? Roaches?
 Bedbugs? Rats? Mice? Other vermin?
 General sanitary condition,

OCCUPATION

.....
 Place,; from to
 Drinking water, Sewage, Other cases, Flies, etc.,

WATER

Kind used thirty days prior to onset of illness:
 Boiled, Filtered, Bottled, kind, Soda water,
 ; where,
 Source, In or for drinking,
 Ice:

FOOD

Where taken thirty days prior,
 Milk, thirty days prior,; from Boiled, Pasteurized,
 Ice cream,
 Milk used since illness; from Bottles,
 Uncooked fruits and vegetables, thirty days prior,; from
 Oysters, Clams, Crabs, Lobsters, Other shellfish,
 Fresh-water fish (Potomac),

CONTACT

Cases in house (six months prior), Cases in house near by (six months prior), Association with infection,

MISCELLANEOUS

Domestic animals on premises: Dogs, Cats, Cows, Horses, Guinea pigs, Birds, Other animals,
 Disposal of feces and urine,
 Other means to prevent spread of infection:

SUMMARY

Remarks:

(Signature of investigator.)

B

Typhoid case card used in 1907, 1908, and 1909. All facts called for by this card were carefully investigated for each case.

Public Health and Marine-Hospital Service — Hygienic Laboratory

TYPHOID FEVER CASE CARD

Date of investigation, Case No.
 Name,
 Age, Color, Sex, Nationality,
 Probable date of onset, Date definite symptoms,
 Name and address of physician:

RESIDENCE

Resident of District of Columbia, years, months.
 Residence when taken sick,; from to
 Previous residences,; from to
 Subsequent residence,; from to
 Temporary absences from District of Columbia within 30 days prior
 Number of occupants, Ages,
 Number of occupants who have had typhoid, When,
 Newcomers in house within three months prior,
 Newcomers in house had typhoid?
 Servants,

White —

Resident, Typhoid?
 Nonresident, Typhoid?

Colored —

Resident, Typhoid?
 Nonresident, Typhoid?

Typhoid at homes of servants, When?
 Disposal of sewage, Water-closets in house?
 Water-closets in yard? Privy? Location,
 General sanitary condition of residence,

OCCUPATION

Place,; from to
 Other cases:

WATER WITHIN THIRTY DAYS PRIOR

..... solely; principally.
 occasionally.

FOOD WITHIN THIRTY DAYS

Where taken,
 Milk (how used),; from
 Boiled? Pasteurized?
 Ice cream? Where?
 Uncooked fruits and vegetables,
 Shellfish,

CONTACT

Association 30 days prior with patients in febrile stage,
 Association with suspected cases,
 Association with persons who have had typhoid within 6 months,;
 1 year,; 2 years,; 3 years,; 4 years,; 5 years,

 Association 30 days prior with persons in contact with patients in febrile
 stage,
 Treatment of stools and urine of patient,
 Other precautions,
 Remarks:
 Summary:

.....
 (Signature of investigator)

In some instances several visits to a home are necessary before all of the data for a given case can be obtained.

As the work progresses, the case-cards are frequently reviewed, so that if any possibly responsible factor is common to a group of cases, the fact may be discovered early and the possible exposure of subsequent cases to the same factor looked out for. By this means an outbreak due to infection in milk supplied by some particular dairyman may be recognized, or at least strongly suspected, frequently at its very beginning.

The cases are charted on a street map of the city, pins, each with the number of the case attached, being stuck in to indicate the places of residence of the cases when the infection was presumably contracted. By means of this map the geographical distribution of the disease can be followed and the grouping and sometimes the relation of cases to one another discovered.

If in the course of the investigation of a case the facts suggest the possibility of some member of the household being a bacillus carrier, effort is made to obtain specimens of feces and urine from such person, for bacteriologic examination. If we find that other members of the household have had typhoid previous to the case under investigation, we usually endeavor to obtain specimens.

We have had one house outbreak apparently due to infection from a bacillus carrier. The family consisted of a mother, a son and three daughters. The son had typhoid in October, 1908. Subsequent to his attack, the three daughters developed typhoid as follows; one in December, 1908, one in January, 1909, and one in February, 1909. Specimens of feces and urine were obtained from the mother and from the son. The son's urine was found to

be teeming with typhoid bacilli, the number being apparently about equal to that of a 24-hour broth culture of the organism. Treatment with urotropin was begun, and within four weeks the urine became free from typhoid bacilli. This man had recovered from his attack of typhoid about three months previous to the examination of his urine, and in the meantime had been employed as a laborer with a large number of other men at the Washington Navy Yard. Had his condition not been discovered and treatment given he might have continued to spread infection for many months or even years. Prompted by the discovery of this carrier, and the general interest that has been given in the last few years to the subject of bacillus carriers, we have had collected and have made bacteriologic examinations of specimens of feces and urine from over 300 persons who have had typhoid fever within the past ten years. This study has been made with the view of determining what proportion of persons in Washington, recovered from typhoid fever, are bacillus carriers, and the findings will be published in our report for 1909.

We have endeavored to make the investigation in Washington as thorough and comprehensive as possible. Our object has been to continue to collect facts until we have sufficient to warrant definite conclusions. We believe that only by such prolonged and painstaking study can the intricate problem of urban typhoid be satisfactorily solved.

As the results of our studies for the three years are set forth in the publications, I shall refer to them but briefly, limiting the reference mainly to the three factors usually most concerned in the transmission of typhoid fever infection, viz., water, milk and personal contact.

Water.—The typhoid fever case rate and death rate in the District of Columbia were lower in 1907 and 1908 than in any other year of which there is record. The death rate per 100,000 of population in 1906 was 49.3, in 1907, 34.5, and in 1908, 36.5. These represent the death rates for the first three years after the filtration of the public water supply was begun. The average annual typhoid death rate for the three years immediately before the filtration of the water was about 44 per 100,000, and for the three years 1900, 1901 and 1902, about 68 per 100,000. The reduc-

tion of the rate in 1907 and 1908 is accounted for by the reduction in the summer typhoid. The rates in the fall, winter and spring seasons of the three years 1906, 1907 and 1908 were almost exactly the same. An important question and one difficult to answer positively is, "How much of the reduction in the typhoid fever rate for the summers of 1907 and 1908 was due to the improvement in the water supply, as the result of sand filtration?" Had such a reduced rate been observed in the summer of 1906, the first summer after the filters were put into operation, there would probably have been few, if any, who would have doubted that the reduction in the summer typhoid had been accomplished by the improvement in the water supply. In 1906, however, the rate equaled, or even exceeded, the rates of the several years previous, despite the fact that the results of the bacteriologic analyses of the water showed that the filtration effected a very great reduction in the bacterial content of the applied water, such as was supplied the city during the three years prior to filtration. Judged by bacteriologic standards, we found the filtered water supplied the city during the typhoid seasons of 1907 and 1908 was of considerably better quality than the filtered water supplied the city in the season of 1906. The fact that the lower typhoid rate in the summers of 1907 and 1908 followed the higher degree of improvement in the filtered water seems to suggest cause and effect.

As a board, we have not been able to decide definitely as to what part water-borne infection played in the causation of typhoid fever in 1906, but we are satisfied from the results of our studies, that the Potomac river water previous to filtration caused much less of Washington's typhoid than was generally supposed, and that in the typhoid seasons of 1907 and 1908 the filtered public water supply played a relatively minor role, if any, in the causation of the disease.

Milk.—In the typhoid season (May 1 to November 1) of each of the three years 1906, 1907 and 1908, we have definitely attributed about 10 per cent. of the cases originating in the District of Columbia, to milk-borne infection. These cases occurred in the course of pronounced outbreaks among the customers of certain milk dealers. In the season of 1906, there were three such out-

breaks, in the season of 1907 one, and in the season of 1908 one. The outbreak in the fall of 1908* was of particular interest, inasmuch as the infection was traced to a bacillus carrier who was engaged in handling the milk on one of the farms from which the implicated supply was obtained. This woman gave a history of having had typhoid fever eighteen years before and of having been since then in robust health.

Besides the cases which have occurred in the course of pronounced milk outbreaks, we believe that there have been a number of scattering cases due to infected milk which we have not been able to trace, and we consider milk one of the major factors concerned in the transmission of typhoid infection in Washington.

Contact.—Of the cases originating in the District of Columbia in the typhoid seasons of 1907 and 1908, about 20 per cent. gave a history of more or less direct or indirect association during the thirty days prior to onset of illness, with previous cases of typhoid fever in the febrile stage of the disease, and were attributed to infection by contact. Considering the amount of association between persons living in a large city and the number of ways in which infection through personal contact may occur, it is easy to understand that many cases of typhoid fever in a large city may be due to infection by contact which cannot be traced.

We regard contact as one of the major factors now concerned in the transmission of typhoid infection in the District of Columbia.

Imported Cases.—About 24 per cent. of the cases of typhoid fever which were reported in the District of Columbia during the typhoid seasons of 1907 and 1908 were cases in which the infection had been contracted out of the District of Columbia. In the 1906 period, the imported cases amounted to about 15 per cent. of the total.

A number of interesting details as to seasonal prevalence, geographical distribution, racial prevalence, etc., have been worked out, but they are contained in the published reports† and enough

* Lumsden, L. L., and Woodward, Wm. C.; A milk-borne outbreak of typhoid fever traced to a bacillus carrier; Journ. Amer. Med. Assn., March 6, 1909, vol. 52, pp. 749-752.

† Rosenau, M. J., Lumsden, L. L., and Kastle, J. H.; The origin and prevalence of typhoid fever in the District of Columbia; Report No. 1, Hygienic Laboratory Bulletin No. 35, Washington, D. C., 1907 (season of 1906); Report No. 2, Hyg. Lab. Bull. No. 44 (season of 1907); Report No. 3, Hyg. Lab. Bull. No. 52 (season of 1908).

has been cited to give some idea of the intricacy of the typhoid fever problem in Washington.

There is no mystery as to why Washington has some typhoid fever, but in view of the general sanitary conditions, an annual typhoid death rate of 35 per 100,000 does seem comparatively high, provided that none of the infection is water-borne.

In considering Washington's typhoid rate it should be borne in mind that Washington is climatically a southern city, surrounded by and obtaining its food supplies from a rural section in which typhoid fever is highly prevalent. I know of no city of over 75,000 inhabitants, south of Washington and east of the Mississippi river, which during the two years 1907 and 1908 had a typhoid death rate as low as that of Washington.

In attempting to draw conclusions from the data which we have collected in Washington we have realized the need of comparable data from other cities. Unfortunately such comparable data as are now available are too meagre to be of much value.

Investigations similar to the one we are conducting in Washington, if carried out simultaneously in a number of the larger American cities, would throw much light on the great problem of urban typhoid, both locally and generally.

By some it may be considered unfortunate that the typhoid problem in Washington has proved to be of such complexity that after three years of study we have not been able to solve it with mathematical exactness,—in other words, to point out definitely the immediate source of infection for every case; but by those taking a broader view of the subject, I believe it must be considered fortunate, because for investigators of similarly complex typhoid situations, our methods may serve as a guide and our failures prevent discouragement. In the simpler typhoid situations, such as the explosive outbreaks due to highly infected water or milk, and the typhoid in small towns and in rural sections, these epidemiologic methods should almost invariably yield satisfactorily definite results.

In conclusion I would urge every local health officer to apply himself with might and main to the typhoid fever problem in his community. Of the widely prevalent infectious diseases none promises better results from equivalent amounts of intelligent

effort at prevention than does typhoid fever. Considering the tremendous tax in lives and resources which the American nation pays annually to typhoid fever, the time certainly seems ripe for our health officials,—city, county, State and national,—to begin a general and concerted plan of action against this “pestilence that walketh in darkness.”

DR. H. H. CRUM—*Mr. Chairman, Ladies and Gentlemen:* I will simply add a concrete instance of the importance of milk.

On the 9th day of August of this year I discovered a case of typhoid in the home of a milk dealer named Quick. The case was removed at once to the City Hospital. The house was cleaned; the drains and closets were cleaned, and Mr. Quick did everything I asked him to do and did it under my direction.

The patient, a daughter-in-law of Mr. Quick, had been away from home—in Binghamton and other places, and I was led to believe at first that she might have contracted the disease in some of these places.

But, August 16th typhoid began to be reported and in two or three days more than a dozen cases were reported. All these cases were in one small locality, and I found that all used milk purchased from Mr. Quick. I visited Mr. Quick and got his milk route in detail and I found that less than one-half of his route was affected. I found that the first part of his route was free absolutely. On this part of his route he sold exclusively milk produced by himself. I then found that the milk sold on the part of the route infected was purchased by Mr. Quick from three farmers in Ellis Hollow, east of the city. I sent my milk inspector to investigate and he reported that one of these farmers, Mr. Middaugh, had been ill a week and that the disease had just been diagnosed as typhoid. The same day the case was reported to me as typhoid by the attending physician.

My inspector also reported that another of these farmers in Ellis Hollow, a Mr. Wilsey, had been ill a number of weeks but that he had had “sunstroke.”

Now, take notice that twelve days had not elapsed since I found the first case, Mr. Quick's daughter-in-law.

I stopped the milk coming from Ellis Hollow. I went out and found that my inspector was correct in his findings. I also found that Mr. Wilsey, our friend with the “sunstroke” had had a little intestinal fever following his stroke; that he had had nasal hemorrhage and hemorrhage from the bowels: as Mr. Wilsey expressed it: “The doctor almost physicked me to death.”

I was now confident that our trouble was due to milk from Ellis Hollow. I might state that I found that Mr. Wilsey's mother was Mr. Middaugh's wife and that Mrs. Middaugh had helped care for her son, Mr. Wilsey, when he had the “sunstroke.”

Time passed; by August 31, thirty-five cases of typhoid had been reported and every one was in the same locality and had taken milk from Mr. Quick. And still no cases developed on the first part of Mr. Quick's route. We continued to get cases of typhoid from this half milk route all through the month of September, and the total of cases due to this infection was over seventy-five.

Now you will ask: How did Mr. Quick's daughter-in-law contract the trouble? I will tell you. He sold all of the milk of his own production first. Then he purchased the Ellis Hollow milk; finished his route; and, if he had any milk left he carried it home and used it in his own family.

A little later in October a rumor reached me that a Mr. Place, six miles south of Ithaca, might have typhoid. As my records show that he was a producer of milk for our market, I communicated with his physician, and on October 18 I received the following reply:

“DEAR DOCTOR.—Replying to yours of recent date, I would state that the patient referred to, Mr. Claude Place, has typhoid fever.

“He undoubtedly contracted it by drinking from the same cup as Royal Johnson without turning out the water left in the cup by Johnson.

"Johnson runs a threshing rig and became sick about two weeks after threshing and boarding at Glenn Wilsey's. He had an atypical, light case of the disease which was incorrectly diagnosed by four doctors, myself included. He ran his threshing rig throughout the whole course of his sickness and at the last infected his wife and daughter, who are now sick of typhoid fever. His blood gives a positive Widal reaction.

"Mr. Place's milk was promptly withdrawn from the Ithaca market and his cows have been taken over by a neighbor who works the herd and sends the milk to the Slaterville creamery.

"Assuring you of my own and Mr. Place's hearty co-operation in any reasonable sanitary measures, I remain,

"Yours fraternally,
....."

We had the water from the Wilsey farm analyzed and Prof. Chamot of Cornell University reported colon bacilli.

Now, whether this well water gave Mr. Wilsey "sunstroke" or whether Mr. Wilsey's "sunstroke" infected the well, or whether the infected well is a coincidence, I will leave you to judge. I do know that the infection in Ithaca extended over a number of weeks. Now we have practically no cases.

I think that this picture I have given you should emphasize the importance of considering the milk supply in every typhoid epidemic, in fact, in every typhoid case.

THE CHAIRMAN — We will now proceed to the last paper of the forenoon session, that is, the paper on Vital Statistics, by Dr. Cressy L. Wilbur, Chief Statistician of the United States Census Bureau, Washington.

VITAL STATISTICS

BY CRESSY L. WILBUR, M.D.

Chief Statistician, United States Census Bureau

One of the best definitions of vital statistics that it has ever been my fortune to encounter was that contained in a little sketch entitled "The Studio Girl: A Tragedy; By One of Them," which I recently noted in the pages of the Sunday magazine of one of the great papers: "It is in the quiet blocks of houses where the ordinary persons live that neighborhood grows and folks draw together through church interests, the next-door feeling, the babies, weddings, illnesses, deaths,— those simple big happenings of life ! "

Vital statistics is the study of those "simple big happenings of life," especially in their collective aspect as massed together for the city, the State, or the nation; and it is my pleasant duty to endeavor to point out to you to-day how supremely important such study is as the fundamental basis of all the public health work now in progress, or contemplated in future, under either municipal, State, or Federal agencies, or, as we are more and more coming to realize, the effective combination of municipal, *and* State, *and* Federal agencies. "Team work" is a favorite expression of my friend Surgeon-General Wyman of the United States Public Health and Marine-Hospital Service, who has just preceded me upon this platform, and the more generally effective *team work* of all agencies that make for the uplifting of the public health can be brought into play, the more rapidly will the fruits of sanitary efforts be realized in the saving of lives from preventable disease and violence, the curtailment of the wasted hours of pain and misery of the sick, and of the loss and suffering of those dependent upon them, and the building up of a happier, stronger citizenship, both of men and women, for the carrying out of the great destiny of the United States.

VITAL STATISTICS AND DEMOGRAPHY

The knowledge of vital statistics is of value not only within the nation, but also for the very important purpose of international

comparisons, by which alone the relative rank and progress of the United States can be measured as compared with the other countries of the world. It may be well to define the meaning of the word "demography," because I find that it is somewhat unfamiliar even to professed statisticians and sanitarians, and because there will meet at Washington before very long the great International Congress of Hygiene and Demography, formed by the union, many years ago, of the International Congress of Hygiene and the International Congress of Demography. The word "demography," or the French *démographie*, was originated by M. Achille Guillard, the grandfather of Dr. Jacques Bertillon, in his volume on *The Elements of Human Statistics or Comparative Demography*,¹ published at Paris in 1855. As Doctor Bertillon observes in the footnote of his work on the *Elements of Administrative Statistics*, from which the above statement is taken, the word is to-day adopted universally, except that it has received comparatively little acceptance among English-speaking nations. We have no other word, however, that fully corresponds to it, and it would be well, in view of the great International Congress soon to be with us, and in whose title it appears, that we should now naturalize it and bring it into common use. Doctor Bertillon defines it as follows: "*Demography* is the study of humanity in the collective sense. Its object is to know of what elements it is constituted, how it lives, and how it is renewed. Its principal instrument of investigation is statistics."²

The Greek origin of the word is a correct guide to its use. As geography is the study of the earth, so demography is the study of the people that inhabit it (*ἡμῶς* people). In its broadest sense, as understood by its creator, "it is the science of all numerical averages which are of interest to humanity." In the more restricted meaning with which we usually employ it, "it is the mathematical knowledge of populations, their general movements, their physical, social, intellectual, and moral conditions." Thus in a recent *Manuale di Demografia* by Napoleone Colajanni of

¹ *Éléments de statistique humaine ou Démographie comparée.*

² *La démographie* est l'étude des collectivités humaines. Son objet est de savoir de quels éléments elles sont constituées, comment elles vivent et comment elles se renouvellent. Son principal instrument d'investigation est la statistique.

Naples, such subjects are considered as the census, number of inhabitants, habitations, and families, composition of the population according to anthropological character, race, language, nationality, place of origin, biological condition (sex, age), disability, social condition (civil condition, religion, education, occupation), marriage, natality, morbidity, mortality, biometry, migration (immigration, emigration, internal migration), tendency to city dwelling, etc. These are classed under the two great divisions of (1) Condition of population (static) and (2) Movement of population (dynamic). To the first, that dealing with the constitution of populations as they exist at a given time, belongs the census; to the second, which traces the growth of populations and analyzes the factors upon which such growth is dependent, belongs what English-speaking persons usually call *vital statistics*, that is, the statistics of humanity concerning those "simple big happenings of life" that come to all of us, and set their indelible impressions upon the history of the race of which we form a part.

CONDITION OF DEMOGRAPHY IN THE UNITED STATES

At a time when we are expecting the arrival of a host of European demographers, many of them trained in the methods of the most advanced civilization, it may be well to consider the present status and prospects of demographic investigation in the United States. Demography is dependent, as we have seen, upon two important factors, (1) knowledge of the *population* which is obtained by means of the census; and (2) knowledge of the *movement of the population*, which can only be obtained by the effective registration of vital statistics. As regards the census of population, the United States occupies perhaps a more advanced position than any other country in the world. It was the first nation to insure, by an organic provision of the Constitution, that regular decennial censuses of population should be obtained as a part of the fundamental law of the land. The Thirteenth Decennial Census of the United States will soon be taken, as of April 15, 1910, and from the first census of 1790 to the present, and undoubtedly for all future time while the United States remains a nation, these decennial censuses may be depended upon to supply all necessary demographic data as to the condition of the people at the time upon

which they were taken. Many States moreover, among them New York, have very complete interdecennial censuses, so that every five years, or at most every ten years, we have a thorough summing up of the people of the United States, together with statistics of agriculture, manufactures, mining, and of other subsidiary inquiries, that meet the demands for full knowledge concerning the condition of the country.

As regards the other and equally important phase of demographic study, the movement of population, the condition of the United States is far otherwise. For a large part of the United States, including practically the entire South except for a few registration cities, we have no vital statistics at all of a reliable character. In no southern State at the present moment is there complete, successful, State-wide registration of even deaths alone. Possibly in not a single State of the Union at the present time — certainly not a few years ago — is there complete, successful, State-wide registration of births; not even so complete that we could be assured that at least nine births are registered out of every ten that actually occurred. You will note that I do not speak definitely as to the actual condition at present with respect to the registration of births. This is for the reason that a special collection was made by the Bureau of the Census of all the births registered in the United States for 1908, and until the compilation has been completed and the data analyzed, I would prefer to speak only in general terms. But it is certain that there are very few places in the United States where *all* births are registered, or even where births are registered with an approach to a fair degree of completeness so that it is worth while regularly to collect them from the State or city registration offices, in accordance with the Act of Congress relating thereto, as the beginning of a registration area for births of the United States. The term "registration area," as used in all the vital statistics reports of the Federal Government since 1880, relates simply to the registration of deaths; which fact is a sufficient commentary upon the present condition of vital statistics in the United States at the end of the first decade of the twentieth century. In no other civilized country in the world is there such gross and utter neglect of the registration of vital statistics, a function which is considered an indispensable part of the duty of a modern progressive nation.

LOSS TO THE CITIZEN AND TO SANITATION FROM NEGLECT OF
VITAL STATISTICS

Important as the proper registration of vital statistics in the United States may be for demographic purposes — and it is not pleasant to have other countries in a position to point to the national neglect of this subject as evidence of the crude and semi-civilized condition of civil administration in the United States — I should not urge upon you solely, or chiefly, the necessity of more adequate registration of births and deaths from this point of view alone. Indeed, I may assume, in this assemblage of health officers of the Empire State of the Union, whose population as determined next year will probably nearly if not quite equal the entire population of England and Wales at the beginning of the last century,¹ and which sustained the terrific struggle of the Napoleonic wars, that neither the disposition nor the means are wanting to secure complete registration of every birth and death that occurs in the State. Surely no argument can be needed as to the necessity of recording every death as it occurs, upon a standard certificate of death, and with the absolute requirement of a burial or removal permit to be issued by the local registrar before any disposition is made of the body. For nearly thirty years, since the first organization of the State Board of Health of New York, of which the present Health Department is the direct continuation, the importance of correct vital statistics has been iterated and reiterated to the people of the State. From the first annual report, transmitted to Governor Cornell, December 1, 1880, I may quote:

Registration of Deaths, Births and Marriages.— *The Bureau of Vital Statistics.*— The records of the sanitary condition of five millions of people and of the movements of this population, the registry of their mortality and the causes of death, the registry of prevalent diseases and a faithful [mark the *faithful*] record of all [*all*] births and marriages, pertain to the Bureau of Vital Statistics. The necessities of sanitary service, and the interests of communities considered socially and physiologically, alike require that this registration in all its parts be complete, uniform in its

* Estimated population of New York, 1910, according to the method of average annual increase, 8,865,722; of England and Wales, by census of March 10, 1801, 8,892,536.

methods, and faithfully attended to in all its details. With the registration of mortality and its various causes, and with the records of prevalent diseases, sanitary officers have constant occasion to concern themselves; but the other two branches of vital registration are also essentially necessary in the study and establishment of the sanitary defenses of the people.

The registration should be *complete*; and the registration of births and marriages is also *essentially necessary*, as well as that of deaths, to the *sanitary defenses of the people*. To-day, nearly thirty years after these words were written, even the registration of deaths is probably not thoroughly complete in all parts of the State. The comparison made by the twelfth census for 1900 showed that for the counties of New York investigated the ratio of deaths registered under the State law was only 90.6 per cent. of those that actually occurred, as determined by the addition of enumerators' returns, thus falling decidedly below the completeness of registration in Michigan, as determined by the same test, 92.9 per cent. for which State the law had only been in operation about two years and had not then been extended, so far as the requirement of compulsory burial permits is concerned, over the entire State. A marriage license law — the only way in which accurate records of marriages can be obtained — has only lately been enacted in New York. For births reference need only be made to the recent Monthly Bulletins of the New York State Department of Health, so ably edited by Dr. Hills Cole, and which are of course carefully read by you each month, to appreciate how worthless the registration of births remains to-day in many parts of the State. I need not point out to you the exact localities where the enforcement of the birth registration law is totally neglected; the figures show for themselves and attention has been called to them time and time again in the Bulletin and in the annual reports. Some places show, as in the table of city birth rates and death rates for 1908, presented in the Bulletin for February, 1909, a large excess of deaths over births, and pointing to a rapid natural decrease of the population — if the statistics are correct. Probably in most instances, such rates are merely indicative of the gross neglect of effective registration of births. It is difficult to understand the apathy of communities to such continued misrep-

resentation of their vital conditions existing through the neglect of the officials charged with the duty of registration. It is interesting to note, however, as showing the tendency of such neglect to continue for a very long period unless sharply checked by the compulsory enforcement of the law, that some of the places noted in the annual report for 1884 as presenting "glaring examples of such defects" in complete registration due to "inefficiency of organization or carelessness on the part of local registrars" are conspicuous to-day, after a quarter century of attempted thorough enforcement of law, for the same unfortunate conditions. In fact a negligent or careless registrar under a State system, unless sharply called to account and punished or removed from office, is a plague spot that may infect the whole system, and bring about its decay.

NATIONAL IMPORTANCE OF THOROUGH REGISTRATION OF BIRTHS IN NEW YORK

Please do not understand that I desire to criticise or to be unduly severe upon the present condition of the administration of the New York laws governing the registration of vital statistics, and more particularly the registration of births. I have said nothing that has not been said again and again in the official publication of the State, and I am proud, as a former New Yorker, of the history of the State in vital statistics. I am grateful for the impetus received from the eminent men of the past who have had the direction of this work in New York, and I am indebted to-day, in my work as Chief Statistician of the Bureau of the Census, for the cordial support and earnest co-operation that we receive, not only from the State Department of Health under Doctor Porter, but also from Greater New York and some other cities of the State from which we receive independent returns. I shall, of course, always be glad that I was born in Michigan. You will pardon me if I shall always consider it the finest State of the Union in many respects. Indeed Michigan is largely New York, that is, it was settled by New York people who followed the Star of Empire Westward from the days when the "Walk-in-the-Water" plied on Lake Erie. As late as 1890, over 12 per cent. of the native-born population of Michigan at all ages were born

in the State of New York, and of course a far higher proportion of adults, especially in the Lower Peninsula. My maternal grandfather, Dr. Alonzo Cressy, practised medicine for a time in conjunction with his father-in-law, Dr. Justin Smith, at Lima, before he went to Michigan Territory in the 30's. I have some of his old books of account yet, with shilling charges, when a dollar was bigger than an eagle to-day. My paternal grandfather, Jephtha Wilbur, one of the pioneer settlers of the Genesee valley, lived on the old homestead, "down by the willows," just over the Monroe county line, in Livingston county. As a boy on the farm Rochester was "The City" to me—the first city that I ever knew. Later, but over thirty-five years ago, I have memories of school days in old "No. 11"; I have yet the certificate of promotion there received. So I was proud when Michigan was acknowledged by the Federal Census—long before my connection with it—as the first registration State west of New York; and the methods that were employed for the registration of vital statistics in Michigan were largely based upon the methods employed in this State.

One of the greatest vital statisticians and practical sanitarians, in my judgment, who ever labored in the United States was Dr. Elisha Harris, the first Secretary of the New York State Board of Health. Coming to the State work after eminent service as Secretary of the Metropolitan Board of Health of New York City, where he had given special attention to the registration of vital statistics, he early adopted methods which were really the fountain source of the laws of many other States, and which are incorporated in the standard bills of the present day as recommended by the Bureau of the Census and approved by the American Medical Association and by the American Public Health Association. It was never my fortune to know Dr. Harris personally, although his face is familiar as one of the early presidents of the American Public Health Association from an engraving that formerly hung on the walls of the Michigan State Board of Health. But his influence is vital and active to-day, and his ideas are being carried out from the Atlantic to the Pacific in many laws passed during the last ten years. I mention this to show how lasting is the influence of thorough work, and how appropriate it would be for the health officers of the State to resolve to thoroughly carry out to-

day that *complete* registration of births and deaths that **Doctor Harris** attempted, and which it is now entirely feasible to *secure*. The language urging the necessity of complete registration **that I** quoted from the first report was doubtless written by **Doctor Harris** with the full approval of the members of the Board, the President of which at that time was Dr. Edward M. Moore of Rochester.

The accurate registration of all births has nearly everywhere been neglected in the United States, even where the records of deaths are tolerably complete. It is more difficult to secure *complete* registration of births, and the great practical importance of such registration, both to the individual and to the State, is *not* recognized as fully as it should be. In the compulsory burial or removal permit, when faithfully enforced, we have an absolute check to the completeness of death registration; but no such check is possible upon the completeness of birth registration, and the unconscientious health officer or registrar of vital statistics may go on in blissful ignorance for years that births are not properly registered in his jurisdiction — unless he chooses to open his eyes and see that they are not. If he really desires to know whether the law is being executed or not, it is very easy for him to ascertain; and it is equally possible for the central office of the State to ascertain and to gauge, with a fair degree of accuracy, just how effective or ineffective the law is for each part of the State. It is only necessary to check up regularly the returns of deaths of infants with the births reported, and to note whether the children born in the city or State and dying under one or under two years of age were registered as births. If they were not registered, then there is a certain penalty of the law for physicians or midwives who fail or neglect to file the certificates of birth, and if that penalty were enforced in each and every instance in which it is incurred, or even in a considerable proportion of such cases, there would soon be an end of defective registration of births.

Is there any reason why the law should not be *enforced*, and the penalty provided therein, which is or ought to be only a reasonable one, applied to every instance of violation? The State aims, primarily, to protect the personal and legal rights of its citizens by establishing accurate records of births which can be relied upon

to prove the important facts contained therein — facts which may frequently be insusceptible of any other proof. The claims of descent, proofs necessary for the inheritance of property, especially from foreign countries, the establishment of school age, age for lawful employment of children, age of consent, voting age, and many other requirements, can be drawn only from accurate birth records made at the time of birth or immediately thereafter. Early notification of births is essential for the prevention of certain diseases, and the total number of births in a State or city is the basis of that most important ratio known as *infant mortality*. The full measure of protection to infant life cannot be extended unless all births are promptly registered, and all the vital statistics of the State are vitiated by the neglect or failure of physicians and midwives to obey reasonable laws for this purpose. Are they to receive general immunity for such negligence, and is it the will of the people of the State that the wise safeguards intended to be thrown around the most helpless and dependent class of the community should be set at naught as if by a specially privileged class who assume to obey or disobey them as a mere matter of personal convenience? The question is one of rapidly increasing importance, as our civilization grows in complexity. Watch the crowds at the office of the Registrar of Records of Greater New York at the Health Department on Sixth avenue, and note the trouble and disappointment, perhaps even the serious loss, that follows when it appears that some careless doctor or midwife in years gone by has neglected his or her duty. The State owes it to the children born that they shall be duly registered under the wise provisions of the State law, and the State owes it to its own self-respect that the law shall be enforced without fear or favor in each and every part of the State. It is a State law; that should be sufficient.

Why are such laws not thoroughly enforced? The answer is simple: Ignorance or incompetency of the local registrar, or fear or favoritism on his part for known violators of the law. The latter reasons are sometimes summarized by the single word *tact*; when a registrar desires a tactful administration, with avoidance of all friction, he can secure it by ignoring violations of the law: Observe that I do not assign any special measure of blame to physicians or midwives for forgetting, refusing, or neglecting to

file their births as the law requires them to do. They are *not* charged with the *enforcement* of the law. An alert local registrar would very soon obtain evidences of delinquency, and thereafter *the* sole responsibility should rest upon him if he did not secure *the* enforcement of the law; and the central office of the State *would* in its turn be responsible if it permitted negligent local registrars to allow the law to be held in disrespect. You will understand that by "local registrar" I mean, not the man who does the mere mechanical work, but the health officer or head of the office who has the power and the responsibility for its proper conduct.

It is true, and must always be remembered, that the chief agency heretofore available to secure the enactment of vital statistics legislation has been the organized medical profession. Registration of vital statistics is medical work, and medical men have pleaded before Legislatures for better laws for this purpose and have greatly aided in their administration, especially as regards the reporting of deaths when the legal responsibility has been laid upon the undertaker. But when it comes to the actual reporting of births, under laws of their own devising, the physicians of the country have been almost universally delinquent. No amount of moral suasion or urging by those physicians who appreciate the great importance of such laws will induce all doctors to voluntarily comply with them, not even when a quite unnecessary and undesirable fee is paid for such returns. As a concrete example the State Registrar of Pennsylvania, Dr. Wilmer R. Batt, recently stated before the Section on Vital Statistics of the American Public Health Association at Richmond, that under the very efficient Pennsylvania law in force in 1906, for the first year resort was had chiefly to educational and persuasive means. As a result about 167,000 births were registered, exclusive of stillbirths. For 1907 the same measures were continued and a few prosecutions were instituted in various parts of the State. The births registered rose to nearly 176,000. For 1908 a thorough system of inspection was instituted, representatives of the State Department of Health personally visiting localities, obtaining lists of children not registered, as shown on the local records, and prosecuting the delinquent physicians and midwives. Over 500 such cases were taken up during the year, and the city authorities for the most part heartily co-operated in the work. As a result over 193,000 births

were registered for 1908, over 3,000 delinquent returns being made for Philadelphia alone. The work is continuing, territory being revisited from time to time to insure that there is no slackening in the enforcement of law. I have been about with one of the State inspectors myself, at Scranton and Wilkes-Barre, and I can assure you that aside from insuring the enforcement of the law, the work is very important as educating the physicians, the midwives, and the people and press generally as to the necessity for proper registration, and that the law is not a mere form to be obeyed or violated with impunity, but a measure for the protection of the legal, personal, and sanitary rights of the children *that must be obeyed*.

Why should not the same measures be carried out in New York? Why should not the law be enforced throughout the State? Are there any reasons why certain cities should not register their births when the State law requires that they should? In selecting the list of eligible States for the registration area of births, which may be constituted by the Bureau of the Census next year, it is certainly disheartening to contemplate the apparent neglect of complete registration of births now existing in certain parts of New York. A few negligent local registrars cast a reflection upon the entire State service, just as a few doctors or midwives in a community who do not choose to obey the law, and are not forced to do so, soon lead to its general neglect. It seems to me that the organized public health officials of the State and the organized medical profession of the State should *demand* that these laws be thoroughly enforced, and should support the conscientious registration official in the thorough discharge of his duty in requiring the prompt and complete registration of all births and deaths that occur in his jurisdiction.

The outlook was never so hopeful as at the present time for greatly improved vital statistics for the United States. We shall start out next year, at the beginning of a new census decade, with a strong organization of the registration officials of the United States, who have constituted since 1907 the Section on Vital Statistics of the American Public Health Association, of which Dr. William H. Guilfooy, Registrar of Records of Greater New York, is now the chairman. This section has already proved of great service in elaborating rules of statistical practice, which may be found each year in the annual reports on mortality statistics published by the

Bureau of the Census, and which will do much to harmonize and render comparable the methods of compilation and presentation of data in the various State and city reports. At Richmond last month the revised United States standard certificate of death was adopted for general use throughout the United States and has been approved by the Bureau of Census. It will be at once accepted by Doctor Porter for use in New York—in fact, the New York State Department of Health was the first State office that promised immediate adoption. New York is now as prompt as it was in 1901, when its action determined the success of the original standard certificate, of which this is the first revision. As chairman of the committee on vital statistics of the American Public Health Association I was appealed to by the Illinois State Board of Health, which had just secured the passage of a registration law, to draft a form of certificate of death for their use. We had then a very excellent form in Michigan, but it seemed to me that by getting two or three States to agree upon a uniform blank, we might secure the adoption of a standard certificate throughout the United States, and so have a uniform basis for national mortality statistics. Doctor Hurty of Indiana and I therefore agreed that we would use the new blank that we were preparing for Illinois for both Indiana and Michigan, beginning January 1, 1902. Happening about that time to be summoned to Washington for consultation by my predecessor, Mr. William A. King, I took the new blank with me and called on the way upon Dr. Daniel Lewis, then State Health Commissioner, at his office on Madison avenue, New York. Doctor Lewis heartily approved the new form, and when I reached Washington with four States, as we supposed, Illinois, Indiana, Michigan, and New York, a unit for the standard blank, Mr. King at once adopted it for the Bureau of the Census and it has been in very satisfactory use in all of the newer registration States since that date. The chief advantages of the revised blank are a better statement of occupation and cause of death, and the provision for certain definite instructions in regard to their statement, so that the returns of deaths will be more precise.

Another promising line of effort just begun is the co-operation of the American Public Health Association and the American Statistical Association with the Bureau of the Census in the

preparation of uniform forms of tables to be used in city, State, and Federal reports upon vital statistics, so that the reader will be sure to find the most essential data presented in comparable form. The Actuarial Society of America has also appointed a strong committee to co-operate in the preparation of life tables based upon the mortality returns for recent years, so that it is of the utmost importance that the registration should be absolutely complete. Again, the efforts of American registration officials have resulted in the success of the movement for a uniform classification of causes of death, and at the Second Decennial Revision of the International Classification of Diseases and Causes of Death, which was convened at Paris last July by the French Government, the registration officials and medical profession of the United States were specially represented in the Census Commission authorized by the first act passed by the present Congress. The number of registration States (for deaths) has grown from nine in 1900 to eighteen in 1909, including the great State of Ohio recently admitted, and the proportion of the population contained in the registration area now exceeds 55 per cent. of the total population of continental United States. Good laws have been passed in other States, among them Delaware, Missouri, and North Carolina during the present year, and there is active interest in obtaining and enforcing good legislation for vital statistics. All this is for deaths, however, and we must look to our old registration States to show that they can bring up the standard of birth registration so that they can be accepted in the first registration area for births constituted by the Census. It would be a shame indeed if States with comparatively recent laws should surpass them, and be entitled to admission while they remain in the old rut of slack and negligent enforcement of law. I cannot believe that the Empire State will not rise to the occasion, and that every local registrar, every health officer, and every citizen of the State will not co-operate with and earnestly support the State Health Department in the thorough enforcement throughout the State of those registration laws upon which the success of its sanitary work is so absolutely dependent.

THE CHAIRMAN — We will now have discussion on this paper by Dr. Albert Mott, of Cohoes, N. Y.

DR. ALBERT MOTT — As is well known, the division of vital statistics of

the State Department of Health has to deal with returns of the local registrar of vital statistics from the municipalities of the State. The necessity of uniformity and accuracy in the returns has been thoroughly elucidated in the paper just read. We know that the credit of the State service must suffer from heedless and incomplete work and in order to secure proper returns the registrar must understand that the same principle that governs successful business corporations must be adhered to in this work. Every detail must be known, and promptness in the execution of the same will be the only means of obtaining satisfactory results.

Concentration of effort is imperative in order to attain the highest degree of success in any undertaking, and in nothing does the principle apply more directly than in the matter of vital statistics. However, centralization of authority is as necessary as concentration of effort in any business. This work is of fundamental importance for the maintenance of public health, and in order for the health officer to do the most effective work we believe there should be no division of authority, but that he only should be responsible for the proper registration of vital statistics in every municipality.

We know that the health officer would often have to deal with busy and inattentive communities, but he should present the essentials of correct registration not only to the laity but to the medical profession of his jurisdiction and as far as possible secure the co-operation of all classes. Chapter 351, Public Health Law, section 1, says in part: "It shall be the duty of every physician in the State of New York to report in writing, on a form to be furnished as hereinafter provided, the name, age, sex, color, occupation, place where last employed, if known, and address, of every person known by said physician to have tuberculosis, to the health officer of the city, town or village in which said person resides, within twenty-four hours after such fact comes to the knowledge of said physician." Section 3 says in part: "It shall be the duty of every health officer of a city, town or village to cause all reports made in accordance with the provisions of the first section of this act, and also all results of examinations, showing the presence of the bacilli of tuberculosis, made in accordance with the provisions of second section of this act, to be recorded in a register, of which he shall be the custodian." Chapter 396, section 24 of Article 2 says in part: "Every physician shall immediately give notice of every case of infectious and contagious or communicable disease required by the State department of health to be reported to it, to the health officer of the city, town or village where such disease occurs." I have referred to the above items in the Public Health Law to call your attention to the fact that the health officer is made, by these provisions, the registrar of vital statistics for conditions attending the perpetuation of life, excepting births and deaths. The Public Health Law should also require the health officer to have a record of every birth and every death, as prescribed by the State Department of Health. I believe the above are wise provisions, as it gives the health officer proper police power. In order that the health officer may succeed in reaching the largest degree of success in the betterment of the public health, he might have a police power which cares for the health, for the life and for the safety of the community. The Public Health Law provides that the sum of twenty-five cents shall be paid to the physician or person for each case of infectious and contagious or communicable disease reported, and the sum of twenty-five cents for each certificate of birth and for each certificate of death. The provision of a specific amount for such service is a wise one, and will aid materially in securing a complete registration of all cases desired by the department.

As a matter of justice I believe the Public Health Law should be amended so as to provide for the payment of the sum of twenty-five cents for the registration of each birth and death, and for every case of infectious and contagious or communicable disease, and for the granting of each permit for the burial or transportation of the dead, and these provisions should apply to the towns, villages, and cities of the third class in the State. If these suggestions should be adopted in the future and the health officer will co-operate cordially in this matter I am sure we will have a registration of vital statistics in this State that would be superior in quality and completeness.

THE CHAIRMAN — We will now adjourn until 2 o'clock.

FRIDAY, NOVEMBER 12

SIXTH SESSION, 2.30 P. M.

THE CHAIRMAN — The first paper of the afternoon is "Benzoate of Soda in Food," by Dr. Daniel R. Lucas, of New York City.

BENZOATE OF SODA IN FOOD

BY DANIEL R. LUCAS, M.D.

New York City

We can never calculate the causes of disease with mathematical precision.

Fundamental in the study of disease is knowledge of normal structure and function. Here our difficulties are great, for in many organs the structure is exceedingly complex and the function obscure. Regarding the kidney, for example, Sollmann states "in isolating its functions recourse must be had to indirect methods, to deductions and theories, which, in turn, rest on assumptions more or less definitely proven, or more or less probable." Indeed our assumptions are often in inverse proportion to the extent of our knowledge.

Again we always have to bear in mind the condition of the individual and his peculiarities; etiological factors act upon him in various ways. Some persons can swallow without any evil results a quantity of microbes which in the case of other individuals would produce a fatal attack of cholera.

Metchnikoff states "the bodies of men and of higher animals are possessed of a complex mechanism which resists the harmful action of bacteria and their poisons. The various parts of this mechanism may act differently, with the result that there is a great variation in the power of resistance. Thus a multitude of microbes may be in the intestine. They bring little harm to an organism that has a high power of destruction or neutralization of their toxins, or when these harmful products are unable to pass through the intestinal wall. It is in this way that I explain some

exceptions to the general rule, which are exceptions only in appearance."

We have constantly to search for new facts, upon which we must make careful deductions, and then we have to verify our findings by adequate experience. It is, therefore, not astonishing that conclusions of long standing acceptance are made doubtful or wholly replaced by new results of research.

To illustrate: the fact that putrefactive bacteria inhabit our digestive organs and through their activity there produce poisons, which being absorbed act in a very unwholesome manner, has been doubted. Bacteriologists have expressed the opinion that the intestines of man contain scarcely any microbes of putrefactive influence. But recent investigation has proved that the human intestine is constantly the abode of great numbers of putrefactive bacteria.

It is generally accepted as a fact that putrefactive products are toxic. We are not surprised, however, by the observation that the ingestion of a given putrefactive product, e. g., benzoic acid, may cause variable toxic influences in the same individual. Such variations may be due especially to chemical differences in the conditions of administration, i. e., conditions which result in different chemical alterations of the toxic material (and consequently of its effects), such as its conversion into a salt, or its combination with an ingredient of the diet or its absorption by associated matters.

This research was undertaken because of strikingly different experiences with sodium benzoate when taken by mouth in the following ways: (A) Pure, as dry crystalline salt, or in aqueous solutions; (B) in alkaline solutions, or in mixtures rich in fat, carbo-hydrate protein, e. g. milk; (C) in acid vegetables or fruit, either warm, as in tomato soup, or cold, as in canned plums, peaches, tomatoes, etc.; (D) in beverages containing large per cents of organic acids, e. g. cider, grape juice, etc.; (E) in mixtures containing inorganic acids, e. g., artificial gastric juice.

Brunton has compiled data that show the comparative arresting influence of various drugs on the action of ferments (Table 1).

TABLE 1

Comparative arresting action on ferments in aqueous solution.

	Emulsin	Myro- sin	Dias- tase	Inver- tin	Ptya- lin	Pepsin	Pancre- atin	Ren- net
Benzoic acid	2100	1100	1025	400	2600	200	2600	300
Sodium benzoate ...	100	20	100	65	86	—	—	50

*Comparative retarding influence on the development of
Anthrax Bacteria*

	Lacroix prevents	Brunton hinders	Brunton kills
Benzoic acid	2800	2000	400
Sodium benzoate	—	200	—

From this table it is seen that the inhibiting action of a given amount of benzoic acid in combined form, e. g., sodium benzoate, is very much weaker than when the benzoic is free. Ordinary commercial sodium benzoate contains about 75 per cent. of the radical of benzoic acid, but whereas one part of benzoic acid in 2,100 parts of water arrests the action of emulsin, 21 parts of sodium benzoate must be present in a like volume to produce the same effect. A similar subordinate relation to benzoic acid is shown by sodium benzoate when comparative toxicity on other enzymes and bacteria is considered.

Fleck found that benzoic acid, in concentrations equal to 0.6–0.7 per cent. caused marked inhibition of yeast fermentation and that the arresting action was materially diminished by an increase in the amount of associated protein.

Lehmann states on the basis of his own experiments that in the presence of relatively large quantities of albumin, or where the reaction is alkaline, neutral or weakly acid, sodium benzoate is not a good preservative. Lehmann observed also that meat extract putrefied in the presence of 1 per cent. to 2 per cent. of sodium benzoate, but a smaller proportion of benzoic acid, acted more strongly antiputrefactive when the reaction of the extract was markedly acid. He also found that the action of sodium benzoate under strongly acid conditions is practically the same as that of an equivalent amount of benzoic acid, but diminishes with decrease of the associated acidity.

EXPERIMENTAL

I have observed that, although no irritating effect is produced in the mouth, throat, esophagus, stomach or intestines by certain proportions of sodium benzoate when taken in cold, fresh milk and into a full stomach, on the other hand, a very pronounced action followed the ingestion of the same proportions of that substance in warm tomato soup on an empty stomach.

Pure sodium benzoate has a sweet, non-irritating taste, and, when added to fresh milk, imparts to the milk a sweet, bland taste, which is not rendered irritating by amounts of benzoate equal to from 3 to 4 per cent. I have observed, however, that smaller proportions of sodium benzoate induce a decided effect upon the flavor of warm tomato soup. Thus, in such soup, sodium benzoate produces the burning, acrid irritation, especially noticeable in the posterior part of the buccal cavity, characteristic of benzoic acid. Sometimes very small proportions produce in especially susceptible subjects the sensation and effects of benzoic acid, such as burning in the esophagus and stomach, followed by nausea, gastric pain, cutaneous warmth, fullness of the head and muscular weakness. This is especially true when the benzoate is taken in warm, strongly acid, fruit juices.

These observations led me to endeavor to answer the following questions:

- a* Is benzoic acid toxic?
- b* Is sodium benzoate toxic?
- c* What is the degree of antiseptic action or toxicity of sodium benzoate, as a vehicle for benzoic acid, when the benzoic acid is liberated from it and allowed to act in the free state?
- d* Has sodium benzoate an undesirable effect when consumed in fruits or other *acid* food stuffs preserved with sodium benzoate?
- e* What are the influences of various diets on the effects of benzoic acid and sodium benzoate?

1 *Effects on micro-organisms*

A Influence on the fermentation of fruit and vegetable juices. About fifty samples of juice from various fruits and vegetables were used in these experiments. Tomatoes, apples, oranges, plums,

lemons and carrots were used, with the following results: Unpreserved pulp from each of the indicated sources spoiled in from 24 to 48 hours, as was shown by discoloration and the presence of mould colonies.

In the preserved specimens (sodium benzoate 1 per cent.) clear, shining, crystals of benzoic acid separated on the surface of the juices with the strongest acid reactions and in the substance, as well as on the surface, of the pulp specimens. No mould or discoloration occurred in the preserved specimens at the end of twenty days.¹

B Influence on the fermentation of milk.

The observations on fifty samples of milk warrant the following general conclusions:

1 Sodium benzoate (1 per cent.) does not greatly retard the development of the lactic acid ferment.¹

2 Small amounts of sodium benzoate and sodium carbonate both retard the thickening of milk, but similar quantities of sodium carbonate do not prevent its fermentation. Sodium benzoate is distinctly alkaline in reaction. It is probable that it is this alkalinity which increases the fluidity of milk and delays the souring and thickening.

C The action of free benzoic acid on fresh milk.

When fresh milk contains 1 per cent. of added benzoic acid, the thickening of the specimens is delayed very little, if at all. It was observed that, in a very short time after such proportions of benzoic acid were mixed with milk, all taste of benzoic acid disappeared, the specimens assuming a modified benzoate taste, which persisted until a few hours before thickening occurred, when the benzoic acid taste again became evident. It seems obvious that some constituent or constituents of the milk are capable of combining with free benzoic acid and thus preventing the irritating action of benzoic acid on the mucous membranes of the alimentary tract, as well as modifying its taste, when swallowed in sweet milk. The proteins, as well as the alkaline phosphates, may have this property. An inquiry into this matter was made in the following experiment:

Into each of twelve test tubes, 10 c.c of sweet milk were poured

¹ Complete data may be obtained from the author.

and 0.01 gm. of sodium benzoate (0.1 per cent. was then added to each of ten of these portions of milk). (In all previous tests the proportion of sodium benzoate prevented thickening at room temperature for seventeen days.) Decreasing amounts of benzoic acid were then added to seven of these mixtures.

The time of precipitation and thickening indicated that sodium benzoate tends to delay coagulation. The data also show that benzoic acid tends to counteract the retardation of coagulation in proportion to the amount added, and even to hasten the thickening of milk when added in large amounts.¹

From these and the previously mentioned results it may be concluded that one or more constituents of milk have the power of combining with relatively large amounts of benzoic acid, detoxifying it so as to render it comparatively non-inhibiting to the lactic acid ferment and non-irritating to mucous membranes, until the fermentation acidity is developed to a strength sufficient to enforce the presence of free benzoic acid.

II Effects on men

A Influence when administered in acid fruit, juices, vegetables and milk.

Samples of milk and of tomato (hot and cold), orange, lemon, apple, plum and carrot, containing 1 per cent. of sodium benzoate, were tasted by fourteen different persons. Each subject noted a distinctly astringent, irritating taste. In one subject, suffering from coryza, there was an increase of the nasal secretion, accompanied by lacrymation and coughing. There was belching and passage of gas by rectum. In one subject who had been suffering from a gastro-intestinal derangement for several days, the latter effects were especially marked. The sodium benzoate also caused slight nausea accompanied by abdominal uneasiness, for four hours. (This subject, a man of scientific training and experience, pronounced the material — orange juice plus 1 per cent. sodium benzoate) "vicious stuff." It was noted throughout these tests that the irritating effect varied with the degree of acidity of the vegetable product.

¹ Complete data may be obtained from the author.

The observed effects on taste may be summarized as follows:

Acid fruit juices containing 1 per cent. of sodium benzoate have a biting taste, an effect due to liberated benzoic acid. Milk or vegetable alkaline rendered and treated with sodium benzoate (1 per cent.) did not taste of benzoic acid at any time during the first twenty-four hours after the treatment, but when acid fermentation began in spite of the presence of 1 per cent. of sodium benzoate, the mixtures tasted of benzoic acid. In samples of carrot pulp the stinging taste of benzoic acid was not so evident as with the more highly acid materials. Small volumes of orange juice to which 1 per cent. of sodium benzoate had been added, usually caused burning in the posterior part of the mouth, the throat, the esophagus and stomach.

Apple juice to which a small amount of sodium benzoate is added becomes sweeter but astringent and stinging to the taste, and irritating to the mucous membrane. The presence of 0.5 per cent. of sodium benzoate renders apple juice quite unpalatable, but the presence of 0.1 per cent. may be over looked by subjects not acquainted with the taste of pure apple juice.

After repeatedly ingesting small amounts of fruit pulps treated with sodium benzoate (1 per cent.) two subjects experienced fullness of the head, headache, and a feeling of fatigue and depression. These samples were taken into empty stomachs. The results show that benzoic acid, liberated from sodium benzoate by acid fruits and vegetables, is sufficiently irritating to cause gastro-intestinal disturbances, as well as general systemic symptoms.

These preliminary observations were followed by an investigation to determine some of the possible effects of food products preserved with sodium benzoate as allowed by law, and as customarily consumed, e. g., apple juice containing sodium benzoate and taken principally between meals. ("It having been determined that benzoate of soda mixed with food is not deleterious or poisonous and is not injurious to health, no objection will be raised under the Food and Drugs Act to the use in food of benzoate of soda." Food Inspection Decision 104, U. S. Dept. of Agriculture, March 3, 1909.)

Apple juice was used in this part of the study. The quantity of apple juice generally administered was a volume equal to the

average quantity of pure apple juice consumed under normal conditions by the subjects. This "normal" amount was determined by placing freely at the disposal of the subjects five gallons of unpreserved, untreated Baldwin apple juice from cold storage at 32°F, "pressed" and stored one month previous to its use, and which was in a state of perfect preservation. Assistants in this laboratory and various attaches of the college, twenty in number, drank freely of the juice. It was requested of them that a careful record be returned of the amount each consumed. Question blanks regarding symptoms and effects were filled in and returned by the subjects. The average amount of cider consumed by these subjects, men who were busy with their regular work, was 1,200.c.c. Amounts up to 1,500 c.c. were taken rapidly as a rule, while those who drank as much as 2,500.c.c. usually consumed the total volume in two main portions at intervals of two or three hours.

B The effects of pure apple juice.

Pure apple juice is a bland, acid liquid. It does not produce a stinging sensation in the throat when swallowed. The pure juice used in these experiments had not been processed in any way and was very rich in pulp. It had a total free acidity of 2.916 gms. per liter (calculated as acetic, or 3.254 as malic acid). Of this pure juice 100 c.c. yielded to ether 0.002gm. of sticky extractive. Of an aqueous 0.1 per cent. solution of sodium benzoate, 100 c.c. yielded to ether 0.0007 gm. of oily extractive, but 100 c.c. of apple juice containing 0.1 per cent. of sodium benzoate, yielded to ether 0.0827 gm. of extractive. The extractive was a white crystalline product. Amounts of benzoic acid (0.0874 gm. equivalent to those in 100 c.c. of cider containing 0.1 per cent. of sodium benzoate, but dissolved in 100 c.c. of water and neutralized with NaHCO_3), yielded to ether 0.003 gm. of sticky extractive material.

I was unable to find unpreserved apple juice in this city, the dealers in cider in New York informing me that for six months or more they had not had on hand any cider that was not preserved with chemicals such as sodium benzoate or salicylic acid, or both.

The pure apple juice, when consumed in volumes larger than 500 c.c., promptly caused considerable diuresis. The specific gravity of the urine was greatly decreased when a liter of pure apple

juice was consumed. Volumes larger than 1,000 c.c. gave in some cases laxative effects. Several subjects who drank 2,000 c.c. experienced no laxative effects.

The results observed were constant diuretic and occasional laxative effects, immediate feeling of fullness, and the accompanying contentment. The average amount of pure apple juice consumed during three hours by adult males who had free access to it was 1,370 c.c. The consumption of 1,000 to 2,000 c.c. of pure apple juice caused neither headache, nausea, albuminuria, subnormal temperature nor vomiting in any instance.

C The effects of benzoated apple juice.

a First experiment.

Twenty-four subjects were observed in the first experiment. Twelve received pure apple juice; twelve received samples of the same apple juice containing 0.1 per cent. of added sodium benzoate. As none of the subjects knew that they were to receive at this time anything but pure apple juice, unfavorable psychological influences were eliminated from the experiments. Each subject received three question blanks to be filled out by himself daily, so long as any symptoms might last.

The twelve men who took the apple juice containing 0.1 per cent. of sodium benzoate noted on their question blanks collectively the following symptoms: stringent peppery taste, fullness of head, frontal headache, nervousness, belching, griping, passing of gas by rectum, unusual perspiration, nausea, dry mouth, itching of skin and scalp, pain in the stomach, vomiting. There was also irregularity of the bowels (constipation frequently), decreased flow of urine, increased specific gravity of the urine and albuminuria. The average volume of benzoated cider taken in two experiments was 1,090 c.c. and the corresponding amount of ingested sodium benzoate (benzoic acid) was 1.09 gm. Excessive amounts of hippuric acid were eliminated, especially during the first few hours after ingestion of the benzoated apple juice coincident with the tendency to decreased volume of urine secreted.

From careful analysis of all the data it is apparent that small

proportions of benzoic acid in cider caused unusual variation of blood pressure, temperature and pulse, decrease in the normal volume of urine secreted in the first three hours after ingestion, and corresponding increase in the specific gravity, in spite of the ingestion of the great volume of fluid. Albumin appeared in the urine in a number of cases. The urine also caused marked reduction of Fehling solution in a number of cases.

If the apple pulp, protein, etc., is filtered from cider, the effects of the added benzoate on the upper alimentary tract become much more decided.

I was able, however, to ingest 1,000 c.c. of such apple juice containing 0.5 per cent. of sodium benzoate without any albuminuria arising. The amount of hippuric acid in my urine for the first few hours thereafter was excessive. The secretion of urine was very much reduced for twelve hours, while I suffered from some of the other symptoms above mentioned, *although as a subject in a former investigation I ingested, without the slightest discomfort, larger amounts taken in milk and on a full stomach.*

I previously reported, at meetings of two different scientific organizations, the results of experimental work in this relation in which over forty different human subjects were observed and a number of animal experiments performed.¹ The data obtained is so voluminous that it is impossible to give here any of it *in extenso*.

I wish, however, to submit for your criticism the somewhat detailed account of the experiments on one of the subjects in the above mentioned investigation.

This subject, a medical student, good habits, twenty-three years of age, weighed 120 lbs. While not a robust individual, was considered in good health at the time of the investigation. About one year previous to the investigation he had not felt well and was examined by Dr. S. J. Meltzer, who informed him that there were no evidences of heart, lung, or kidney trouble. Several months subsequent to this time he was again examined by another physi-

¹ Jour. A. M. A. vol. liv, No. 10, p. 759, Mar. 1910.

cian in private practice, who also made negative reports of the physical and analytical findings. During the ten days previous to the taking of benzoate, his urine was examined at four different times, on each occasion for albumen, with negative results. During the month previous to the beginning of this investigation, his urine was examined at numerous intervals by three different persons, in connection with some other studies, at all of which albumin was tested for and not found.

Between March 5 and 17, 1909, the subject tasted small amounts of various acid foodstuffs such as orange and lemon pulp, and apple juice containing 1 per cent. of added sodium benzoate. He also tasted pure sodium benzoate in the form of the dry crystals, and in solution, pure benzoic acid under the same conditions, also milk containing each of these substances, etc. The amount of drug taken did not exceed $1/10$ of a gram at a dose, the maximum amount per day did not exceed $1/2$ gram, up to March 18th. The tests were made between 10 and 12 a. m. or 4 and 5 p. m. therefore presumably on an empty stomach; they were made for the purpose of determining the difference in the taste of benzoate and benzoic acid when taken in the various above mentioned ways. The subject did not feel well on the 15th and 16th complaining of headache and fatigue, and albumen was found in his urine on the morning of the 17th. No benzoate was given on that day, but at 12 o'clock at noon the subject was given 1,000 c.c. of absolutely pure and unfermented Baldwin apple juice, which he drank with relish, and rather rapidly.

It was found that the trace of albumen in his urine of the 17th was decidedly less after drinking the cider and until the next test on the following day.

The following are his notes made at the time of experiment on March 18, 1909 and thereafter.

"Took 500 c.c. (apple juice) at 11:45 o'clock, drank it fairly rapidly, then at 12 o'clock took 500 c.c. to which had been added one gram of sodium benzoate. Had a mean, burning taste. Drank last portion slowly. At 12:15 had a heavy and uneasy feeling in the region of my epigastrium. Ate very little lunch. At 12:35

had a heavy movement of the bowels which was acid in character and watery in consistency. At 1:15 had a watery movement which was acid in character. Had a congested and uneasy feeling in head and sweat quite a bit. The feeling of heat and uneasiness disappeared about 3 o'clock and I felt first class after that. ("Another movement, the feces were amphoteric"). A slight trace of albumen was present in the urine of the 18th (probably but little of the benzoate was absorbed).

Friday, March 19th. Took 500 c.c. of cider at 11 o'clock, followed with 500 c.c. of cider containing 5 gm. of sodium benzoate. Had a mean burning sensation. At 11:45 was very nauseated, belched a good deal and felt queer in the head. At 12 o'clock felt flushed and uneasy, sweated, nausea still present but better, pulse was 105, temperature 97°F. At 12:30, feeling much better; 1:50, belching and griping; 2:00, had a little to eat but not much of an appetite; 2:10 had a little movement of bowels (movement was very hard); 3:00 felt miserable, pain in my abdomen, peculiar feeling in my head and general uneasy sensation. Went home, 3:30 to 4:30, slept a little but on getting up felt restless and extremely nervous. Tried to move my bowels but could not. Temperature 98°F, pulse 92 and irregular; 5:30, feeling more easy but still queer in epigastric region and head; 7 o'clock feeling fairly good, a little bit flushed and have belched a good deal, also tympanites; 8 o'clock feeling fairly good but slightly uneasy. Retired at 10 o'clock. (There was a very heavy precipitate of albumen present in the urine of this day.)

March 20th. Had a very poor night of it, being restless and uneasy. At 9 a. m. temperature 96.8°F, pulse 92. Felt exceedingly weak all morning and quit work at 12 o'clock, urine contains a good deal of phosphates and albumen. Took a nap and felt decidedly better. 2:30, pulse 82, temperature 97°F.

The quantity of albumen in his urine was $1\frac{1}{2}$ gram per 100 c.c. (The precipitate obtained in the heat and acetic acid test was filtered out and added to 95 per cent. alcohol and was found to be insoluble, thereby ruling out the possibility that the precipitate might be resinous material.)

On account of the very bad condition of the subject on March 20th the dosage was not repeated; however, the amount of albumen in the twenty-four hour specimen equalled $\frac{1}{2}$ gram per 100 c.c. The large amount of phosphates in the urine subsequent to the dose of benzoate was striking. No dose was given for the following six days, the albumen gradually disappearing from the urine as follows (24 hr. samples):

March 21.— $\frac{1}{2}$ gram per 100 c.c.

March 22.— $\frac{1}{4}$ gram per 100 c.c.

March 23.— $\frac{1}{4}$ gram per 100 c.c.

March 24.—Only a very slight trace of albumen.

March 25.—No albumen.

March 26.—No albumen.

On the 21st and 22d the subject showed puffiness of the eyelids and swelling of the face, which was so perceptible as to cause comment by people who were uninformed regarding the treatment of the subject.

On the 27th the morning urine was free from albumen and at 11 a. m. 1,000 c.c. of cider, containing 1 gram of added sodium benzoate (0.1 per cent.) were taken.

Previous to taking the adulterated apple juice, the pulse was 98, the temperature 98.2, and the specific gravity of the urine 1.010; 45 minutes after taking the adulterated cider the pulse was 104, the temperature 98.9 and the specific gravity of the urine was 1.030.

It had been frequently noted in other subjects that when benzoic acid was ingested a primary heightening of temperature occurred shortly after its ingestion, followed by a prolonged reduction of temperature and irregularity of the pulse. Albumen was present in the subject's urine for the next four days (no benzoate given) during which time the subject did not feel very well. From April 1st to 5th daily observations were made on urinary volume, specific gravity, albumen, reduction of Fehling solution, indican and reaction. (See Table II.) The amount of urine secreted from 10 p. m. April 5th to 9 a. m. April 6th was 330 c.c.

TABLE II

Subject M. G. H. No. III. Date, 1909.	Sod. B. Dose gram.	Adminis- tered in 0.2% HC1 c. c.	Volume C. C.	Sp. G.	Albumen gram. per 100 c. c.	Fehling solution.	Indican reaction.	Reaction to litmus acidity.
April 1.....	0	0	1250	1023	0	0	Normal.....	+ — —
April 2.....	0	0	1100	1022	0	0	Normal.....	+ + +
April 3.....	0	0	1156	1021	Trace	0	Normal.....	+ — —
April 4.....	0	0	*	*	.....	*	Normal.....	+ — —
April 5.....	0	0	1150	1020	0	0	Normal.....	+ + +
Average.....	.....	.....	1187	1021	+ trace	No reduction	Normal.....	Acid.
April 6, 9 A. M.....	0	0	330	1017	0	0	Normal.....	+
April 6, 11 A. M.....	1	50	.....	.....	.....	.....	Normal.....	+ + +
April 6, 4 P. M.....	.....	.....	200	1027	1-16	Reduction.....	Normal.....	+ + +
April 6, 5 P. M.....	1	50	.....	.....	.....	.....	Normal.....	+ + +
April 6, 8 P. M.....	0	0	95	1025	.....	Reduction.....	Normal.....	+ + +
April 6, 10 P. M.....	0	0	110	1027	.....	Reduction.....	Normal.....	+ + +
13 hours.....	2	100	405	Av. 1026	Gt. excess	Reduction.....	Normal.....	Increased acidity.
Total, 24 hours.....	.....	.....	735	1023	Gt. excess	Reduction.....	Normal.....	Increased acidity.
April 7.....	0	0	1500	1027	Trace.....	Reduction.....	Normal.....	+ + +
April 8.....	0	0	1200	1027	Trace.....	Reduction.....	Normal.....	+ + +
April 9.....	0	0	1300	1017	Trace.....	0	Normal.....	+ — —
April 10.....	0	0	1250	1021	Trace.....	0	Normal.....	+ — —
April 11.....	0	0	900	1020	0	0	Normal.....	+ + +
April 12.....	0	0	.....	.....	0	0	Normal.....	.....

* Total twenty-four hours not saved but samples showed no albumen.

No albumen present, specific gravity 1.017. At 11 a. m. on the 6th, 1 gram of sodium benzoate was given in 50 c.c. of 0.2 per cent. H Cl and the dose was repeated at 5 p. m. The volume of the urine was markedly decreased, the volume for 24 hours including the 330 c.c. passed previous to the dosage amounted to only 735 c.c. as against a daily average of 1,187 c.c. on four previous days. The specific gravity was markedly increased, and albumen appeared in large amounts within a few hours after the first dose and was increased by the second dose, and continued present for five days when it again disappeared. The movement of the bowels was normal on the morning of the 6th before the benzoated cider was taken, but the bowels were constipated for the subsequent five days. (See Table II.)

At this point in the experiments the subject was compelled to give up his work on account of the illness of a member of his family whom he nursed constantly, and he was unable systematically to observe his own condition. He informed me, however, that about one week later, at the end of a thirty-six hour period of work, a specimen of his urine did not show any albumen.

DISCUSSION

The results of this investigation show that sodium benzoate is a poor preservative under some conditions. My observations in this regard confirm the findings of Lehmann and others.

In experiments in which I took sodium benzoate in milk, which I ingested from time to time during meals, there was a feeling of malaise. The ingestion at the beginning of meals of acid foods, however, such as tomato soup, plums, peaches, etc., containing added benzoate, was followed in a few days by sharp pains, which set in about thirty minutes after meals and continued for one or two hours. These pains were aggravated by any muscular effort such as the carrying of a heavy satchel. I, therefore, returned to the previous method of ingesting the benzoate, i. e., in milk. The symptoms of gastric irritation then gradually entirely disappeared, in spite of the fact that about three days afterward the dose of benzoate was increased from 2.5 to 3 grams per day for three days. During the succeeding three days, the daily dose was increased to 6 grams, taken on a full stomach in milk, without the

slightest discomfort. As I desired to continue the work until it was completed, I did not repeat the ingestion of large doses in acid food.

The important general difference between my results and those of some previous reports is due, I believe, to the fact that in this research free benzoic acid was the active factor (whereas in others the benzoate may not have been appreciably decomposed into the free acid, or was accompanied by materials which rendered the benzoic acid relatively inert), which was taken in a way quite unnatural to the usual ingestion of certain fruit juices, i. e., apple juice, grape juice, raspberry juice, etc., especially recommended for individuals with kidney affections, because of the absence of any natural benzoic acid.

Such a deduction is in harmony with what we know of the comparative effects of salicylates and free salicylic acid, for example; the acid is much more irritating in its effects than the salt.

Sodium benzoate is effective as a preservative when it yields free benzoic acid. The influence of benzoic acid is, therefore, the essential question in a study of sodium benzoate as a preservative.

Further investigation is contemplated, especially on the influence of nephrectomy on the toxicity of sodium benzoate and benzoic acid.

I am indebted to many of my associates in the Purdue University Alumni Association of New York City for volunteering as subjects in this investigation and thus making it possible for me to carry out experiments on a large number of individuals. The secretary, Mr. Leslie Huxtable, Mr. Ray C. Ewry, Mr. R. W. Parks, Mr. F. M. Walts and Mr. H. Worsham of that organization have given me special assistance in various ways. I am also indebted to Drs. A. E. Olpp and Matthew Steel and Messrs. Herzfeld and Bisch for co-operation, and to Drs. Foster, Mosenthal and Rosenbloom for assistance. Professor Gies has given me all the facilities of his laboratory for conducting this research, as well as valuable criticism and suggestions.

DISCUSSION

PROFESSOR V. J. CHAMBERS of The University of Rochester — Before starting the discussion of this paper, as that is what I am to do, and not to give an independent paper, there are one or two points in Dr. Lucas' paper which I would like to be set right on. In his experiment on the cider with benzoic

acid and the cider without it, in one report I have of the late Denver speech, it is reported as giving discomfort in both cases. The subjects who had the cider containing no benzoate, had none of the headache whatever, I understand now. Didn't they have a certain amount of the same symptoms?

DR. LUCAS — I do not find that pure apple juice could be considered as the cause of headache in any of the experiments which I have performed.

PROF. CHAMBERS — The reason I asked the question is that in the report of the Denver address, which is similar to this, it is stated that you said that pure cider had given feelings of discomfort. Twelve men who received it during the first experiment showed the following symptoms: Fullness, belching, griping.

DR. LUCAS — I have collected a large amount of data, which it would be impossible to give at this time. You notice how long it has taken to give the data of even one of the tests. During the time of the investigation some of the subjects noted symptoms, all of which are recorded in the study as a whole, and which I have omitted from this report for the sake of clearness and brevity.

PROF. CHAMBERS — Then I will assume this is correct here?

DR. LUCAS — Yes, sir.

PROF. CHAMBERS — Then in your description of that one detailed case of the mechanical engineer, you give the effect of feeding the benzoated cider?

DR. LUCAS — Yes, sir.

PROF. CHAMBERS — Did you try the effects without the benzoate?

DR. LUCAS — Yes, sir.

PROF. CHAMBERS — What was the result?

DR. LUCAS — There was no discomfort, or positive analytical findings.

PROF. CHAMBERS — No feeling of discomfort whatsoever?

DR. LUCAS — As I have said, I could not give the complete details and all of the sidelights, but have given an abstracted statement.

PROF. CHAMBERS — In preparing my discussion, I had to rely on the paper presented in Denver.

While this paper of Dr. Lucas's is primarily the effect of sodium benzoate in a more or less acid fluid, cider, it seems to me — although I believe he does not wish it to be meant so — to assume a much broader meaning. The experiments as he recorded them would apply to any acid foods, and not merely to cider; and I shall discuss the paper, with that point in view, making the application broader and more extended than he intended when he wrote his paper. That is what everybody will understand.

On May 4, 1909, was issued the report of the Referee Board of Consulting Scientific Experts of the United States Department of Agriculture, entitled "The Influence of Sodium Benzoate on the Nutrition and Health of Man." This report contains an account of the most exhaustive piece of experimental work ever performed on this question, and the conclusions reached by this Board are as follows:

1. Sodium benzoate in small doses, under 5 grams in a day, mixed with the food, is without deleterious or poisonous action, and is not injurious to health.

2. Sodium benzoate in large doses, up to 4 grams per day, mixed with the food, has not been found to exert any deleterious effects on the general health, nor to act as a poison in the general acceptance of the term. In some directions there were slight modifications in certain physiological processes, the exact signification of which processes is not known.

3. The admixture of sodium benzoate with food, in small or large doses, has not been found to injuriously affect or impair the quality of nutritive value of such foods.

In the May 26, 1909, number of the proceedings of The Society for Experimental Biology, we find a paper by D. R. Lucas, entitled "Some Effects of Sodium Benzoate." The contents of that paper, together with certain additional experimental results, were given by the same gentleman at the Denver meeting of the Convention of State Food and Dairy Commissioners, held at Denver, August, 1909. Dr. Lucas's work is divided into three parts: 1st, effects on micro-organisms; 2d, effects on man; 3d, effects on dogs. The latter one he has not touched on to-day. His results are at variance with the results

obtained by the Referee Board; and I want to quote Dr. Lucas perfectly correctly here, and he says in this, which is a duplicate of what he has just given us, as far as this is concerned: "The important general difference between my results and those of previous observers is due, I believe, to the fact that in this research free benzoic acid was the active factor, whereas in the others the benzoate was not appreciably decomposed into the free acid or was accompanied by materials which rendered these benzoic acids relatively inert."

He claims, and justly, that in practice it is used in such more or less acid foods as tomato ketchup, cider, grape-juice, canned fruits, jams, lemonade and so forth. I do not know that he put all of those in, but those are the things in which we know it is used.

Now this claim of his rests primarily on the assumption that sodium benzoate administered in milk, as it was, to a large extent by the Referee Board, is still sodium benzoate after it has passed into the stomach and become mixed with the stomach contents; and that it is, therefore, in an entirely different state than if it had been administered as benzoic acid. That is the crucial point, it seems to me. The Referee Board gave the material in milk, which is not an acid food to any extent. He gave it in an acid food; as he says in the latter part of his paper, he believes the difference in the results to be due to the fact that he worked with it in a normal condition, such as is natural. I say that he says that by inference, but he does not state that. It must be so, however, as I have inferred from his paper. First, we have to examine whether this assumption is warranted. I will now show you such an assumption is entirely unwarranted by the known chemical and physical facts governing the case.

Professor Herter, of Columbia University, in his discussion of the work of the Referee Board, before the Denver meeting, above referred to, made the following remark: "Another reason why no investigation of free benzoic acid was undertaken, is because in normal stomachs secreting hydrochloric acid, it is likely that the liberation of benzoic acid from sodium benzoate takes place in the acid contents of the stomach, or, in other words, that this liberation of acid gives rise to conditions similar to those which would be obtained from the introduction of benzoic acid in small quantities."

Now let us examine the question from the chemical and logical standpoint. In the first place, benzoic acid is a very weak acid, and it could not exist as soft, sodium benzoate in the presence of the stronger acids, in large amounts.

We then come to the question: Is there an acid present in that stronger than is present in the milk, and stronger than benzoic acid? There is.

We have the acid coming from three sources: First and most important is the gastric juice, which according to Wood, contains from one-tenth to three-tenths of hydrochloric acid; and according to other authorities, even higher, one giving it as high as .5. I have taken the least figures, those given by Wood, one of the professors who is looked upon as an authority. Then we have, according to Gambie, the fermentation process going on all the time in the stomach. Finally, there is acid taken in with the food, as no one takes a meal without getting more or less acid in the food. We find that there is a chance for the acid to get there in the stomach, and the fruit acids ingested in the meal must be considered.

Then we consider the next question: Is it there in sufficient quantity to liberate the benzoic acid? I think I can say it is.

Using the average data given by Wood, Gambie and others, we find there is sufficient gastric juice to free fifteen grams of sodium benzoate. Fifteen grams of sodium benzoate is the amount present in thirty pounds of food. We find by the same data, we find that there is fifty-two times as much as is necessary to liberate the benzoic acid. The claim that part or all of this hydrochloric acid is used up in combining with the protein of the food has no bearing on the question as these chemical combinations are so weak and of such an unstable character that water itself will accomplish a partial decomposition. The hydrochloric acid leaves the protein combination, and acts on the sodium benzoate. So you see, figuring from known data, we have enough acid in the stomach to effect this liberation.

I thought it wise to try it experimentally, and so I had it carried out under

my instructions. Two hundred and fifty cubic centimeters of good milk were treated with sodium benzoate. It was allowed to stand one-half an hour. It curdled at once under the influence of hydrochloric acid; and then the mixture was analyzed for benzoic acid by the usual method. We put in 12/100 of one per cent. of sodium benzoate, and we obtained as benzoic acid 10/100. I think that pretty well answers that question, that after the addition of the dilute benzoic acid, the preservative is there as benzoic acid.

In the light of the chemical and physiological facts given, we are forced to the conclusion that in the experiments of both the Referee Board and Dr. Lucas, the preservative was present in the milk in the same condition, namely, as benzoic acid.

The experiments being the same, then, as far as the actual condition of the preservative is concerned, we next turn to a comparison of them, as to which were carried out under the more normal conditions; which were the more comprehensive and thorough, and which were directed by men of greater experience in carrying out and interpreting the results of researches of this kind. The experiments of the Referee Board were carried out with as close an approach to the actual conditions of living as possible, so that if any unfavorable results should arise, they would have to be due to the only unknown factor in the experiment, namely, the preservative.

The experiments of the Referee Board were carried out in something of this order:

In the first place, the subjects were fed and a careful examination made of all body processes in order to find what the normal condition of the health of the individual was. Then they were given sodium benzoate, and a most exhaustive examination made to see whether that sodium benzoate had any effect upon the value of the food or disturbed in any way appreciable the body processes. Dr. Lucas's experiments he has outlined to you. His experiments on the group—I think Dr. Lucas made only one experiment—it was one evening's work in the administration of material. The experiment on that one particular individual which was recited in considerable detail, was carried out for a longer time, about two weeks, I think it was.

DR. GOLER—Mr. Chairman, this paper was not down for discussion.

DR. THOMAS—Now, as regards the comprehensiveness of the experiment. They carried out experiments for more than four months. As regards the question of whether those experiments were carried out under the most normal conditions, they gave the material in the food, and in the way we would get it. Whereas Dr. Lucas gave it in cider, not with meals, but after meals; and, although it may be the normal way of taking cider, it is not the normal way of taking sodium benzoate or any food preservative of that kind.

The Referee Board obtained no unfavorable results. Dr. Lucas did.

How shall we explain that? The material is the same in both cases, and yet in one case they got bad results, and in the other they did not. It seems to me Dr. Lucas's experiments can be explained on the assumption that it was not the preservative but the excessive amount of cider which his subjects took. I know some of us are very sensitive to the action of cider. I should myself be somewhat concerned about taking the large quantities which he administered.

On the result of albuminuria, he got albuminuria, with cider containing sodium benzoate. Now he did not get it with all of his people; and in the next case Dr. Smith of New York has had similar experiments, and reports no albumin. Dr. Herter obtained none. Dr. Wiley, in his study of sodium benzoate, carried out experiments for twenty days on six individuals, all of whom were fed sodium benzoate, and no albuminuria was noticed.

Now Dr. Lucas only got albumin in some of his cases. It seems to me that it was the excessive amount which he used. The whole question is—

DR. GOLER—The whole question is: Do we want benzoate of soda or any other such preservatives in our food?

THE CONFERENCE—No!

DR. GOLER—Then that is all there is to it

THE CHAIRMAN—We will now hear from Mr. Harding—Professor H. A. Harding, of Geneva, on "The Control of a Milk Supply."

THE CONTROL OF A MILK SUPPLY

BY PROF. H. A. HARDING

Geneva, N. Y.

During the past five years there has been a growing interest in the subject of a better milk supply. In some of the larger cities this has led to an active study of the problem on the part of the health authorities but in the larger number of the medium sized and smaller cities of the State the milk supply has not been materially affected. This is largely due to the fact that the problem in the smaller cities is quite different from the one which is being solved in such cities as New York, Buffalo, Syracuse and Rochester and the experience gained in these larger cities is not easily applied to the smaller ones.

How shall we control the milk supply of the smaller cities? The true answer is that we can not control it. We might as well admit that to begin with. On the other hand, if we are tactful, we can so manage affairs as to rapidly improve it. Our ability in this respect is based on the fact that practically every one connected with the business is desirous of a better product and it only remains for us to so direct these forces that the proper end shall be accomplished.

In taking up this milk problem let us not forget that the milk business is a commercial proposition which must yield a reasonable profit to the milk man if it is to be run at all. To be a progressive dairyman, a man must be making something more than a bare living. A business man who is only making enough to keep body and soul together is not one with whom we can labor profitably in our progress toward better things.

Geneva has a population of about 14,000 and its milk is supplied by about 500 cows. The milk business gives employment to about 100 people. A modest estimate of the capital invested in the business is \$125,000.

Have we any other line of business in any of our cities with a capital of \$125,000 and 100 hands on the payroll where we would

undertake to arbitrarily dictate the details of conducting the business? In any similar case would we not consult with the management of the plant and confine our recommendations to a general statement of the end to be attained, leaving it to the business management to arrange the details? Do we so thoroughly understand the running of the milk business that we are in a position to draw up detailed statements of the way in which milk shall be produced which shall look sensible to the man who is actually in the business?

The two health departments which have been pioneers in this work in this State are those of New York and Rochester. If there are health officials in the State who are qualified to draw up directions for the production of sanitary milk it surely is the officials connected with these cities. It is a well known fact that New York city has met strenuous opposition in its efforts. A considerable part of the distrust which the farmers feel toward this department is due to a clause in their dairy regulations that the stables must be cleaned before each milking. That seems like a sensible requirement and one tending to sanitary condition if one is not familiar with dairy matters. Those who are familiar know that the removal of the manure in the morning creates such an odor as to make it desirable to delay milking for a considerable period. The effect of the regulation is to convince the producer that he is being dictated to by some one who knows nothing about the business and his tendency to co-operation is destroyed.

The Rochester regulations while good in the main require the rejection of the fore milk. Under conditions as they exist in the milk supply of Rochester there is practically nothing to commend this ruling while the producer is aggravated by the continued and really unnecessary loss of even this small part of his product.

If these departments with the amount of study which they have given to the subject make these untactful mistakes how much more shall we stumble in any attempts at direct regulation. In our attempts at improving the conditions of our local milk supply let us then start with the agreement that we will not attempt to specify the details of the business.

If we are to guide the milk business of our communities into higher and cleaner channels there are a number of things which we must remember:

1. That the law of supply and demand is fundamental to every business proposition. In the past it has been practically impossible for the consumer to know anything accurately concerning the sanitary quality of the milk which is on the market. If you can furnish him with this information it will be a long step in assisting him to get the best article which is to be had at the common price. If the facts of the local market can be made clear to both the producer and the consumer the law of supply and demand will regulate both the quality and the price.

2. That each milkman has a natural pride in the reputation of his product and in a community where each consumer knows something of the producer this is an efficient lever in improving quality.

3. If we are to obtain and hold the confidence of the producer we must serve his real interests as carefully and faithfully as we do those of the consumer.

4. That much of the injury to the milk occurs because of the ignorance of the milkman. We should strive to lead him kindly to a knowledge of better things.

5. That clean milk is not a commercial possibility at present. Really clean milk under present conditions costs about fifteen cents a quart to produce and at this figure it is an impossible commercial article. Let us strive to see that our local supply gradually becomes less dirty than at present. The dirtier the present conditions the easier it will be to start changes for the better.

6. That it is illogical to expect to raise the entire local milk supply to a dead level of quality. There are the same reasons for different grades of milk as for different grades of cotton cloth. Any one who has thought on the subject recognizes that a higher sanitary quality is desirable for feeding babies and invalids than for cooking purposes. While the amounts of fat are somewhat important from the food standpoint the main differences in the milk supply lie in the presence of varying amounts of cow dung and of germs of animal diseases. Let us help the public to determine the real quality and buy intelligently. It is, of course, understood that we should cut off at once any milk which has been exposed to diseases such as typhoid or diphtheria, but the tuberculosis situation is too complicated to permit us to act so summarily in this case.

In order to make these statements more clear in their application let me call your attention to the way they were applied at Geneva. This is a city of about 14,000, with a mixed population, largely engaged in manufacturing. Our first step was to call the milkmen together and explain that we did not intend anything revolutionary, but that we intended to put the facts regarding the production of milk squarely before the public after we found out what the facts really were. They were at liberty to produce milk in practically any way they wished, but were not to take it unkindly if we later reported their carelessness to the consumers.

The next step was to get an inspector and we had the usual struggle with the civil service commission, and drew a man who knew from which end of a cow milk was to be expected, but that was about the limit of his practical knowledge of sanitary dairying. He was a good, bright fellow and after some training came to do his part very well. He is now attending the Dairy Short Course at Cornell University and will be in condition to be of real assistance in the work. If we are to get good results from this dairy supervision it must be done by some one who really knows something more than the general principles of the business and we shall have to look to the Cornell Dairy School for our men in most cases. I know of no other place where a man can get such training. It will cost him about \$75 for the course.

The next need is for a simple basis for expressing the results of the inspection — a score card. There are three or four score cards in use and the object of all of them is to express in a comparative way the actual conditions to which the milk has been exposed. None of them are perfect and any of them are usable. My preference is for the Cornell Score Card, devised by Professor, now Commissioner, R. A. Pearson. A copy of this card is here given and samples may be obtained from the dairy department, Cornell University.

DEPARTMENT OF DAIRY INDUSTRY, COLLEGE OF AGRICULTURE, CORNELL UNIVERSITY
Score Card for Production of Sanitary Milk

Date..... Dairy of..... P. O.....

	Perfect.	Score.	Remarks.
I. Health of the herd and its protection.			
Health and comfort of the cows and their isolation when sick or at calving time.....	45	.....	.....
Location, lighting and ventilation of the stable.....	35	.....	.....
Food and water.....	20	.....	.....
Total.....	100	.....	.....
II. Cleanliness of the cows and their surroundings.			
Cows.....	30	.....	.....
Stable.....	20	.....	.....
Barnyard and pasture.....	20	.....	.....
Stable air (freedom from dust and odors).....	30	.....	.....
Total.....	100	.....	.....
III. Construction and care of the utensils.			
Construction of utensils and their cleaning and sterilizing.....	40	.....	.....
Water supply for cleaning and location and protection of its source.....	25	.....	.....
Care of utensils after cleaning.....	20	.....	.....
Use of small-top milking pail.....	15	.....	.....
Total.....	100	.....	.....
IV. Health of employees and manner of milking.			
Health of employees.....	45	.....	.....
Clean over-all milking suits and milking with clean, dry hands.....	30	.....	.....
Quiet milking, attention to cleanliness of the udder and discarding foremilk.....	25	.....	.....
Total.....	100	.....	.....

V. Handling of the milk.	Prompt and efficient cooling	35	.....	.....
	Handling milk in a sanitary room and holding it at a low temperature	35	.....	.....
	Protection during transportation to market	30	.....	.....
	Total	100	.....	.....
	Total of all scores	500	.....	.....

If the total of all scores is And each division is The sanitary conditions are

480 or above. 90 or above. Excellent.

450 or above. 80 or above. Good.

400 or above. 60 or above. Medium

Below 400. Or any division is below 60. Poor.

The sanitary conditions are Scored by

A BRIEF DESCRIPTION OF WHAT CONSTITUTES PERFECT UNDER EACH HEADING.

- I. *Health*—No evidence of chronic or infectious disease or of acute disease in any member of the herd on the dairy premises. Freedom from tuberculosis proven by the tuberculin test made within one year.
- Comfort*—Protection from weather extremes. Stall comfortable—at least 3 feet wide for a small cow, or $3\frac{1}{2}$ for a large cow; length of stall sufficient for cow to rest easily. Sufficient bedding. Frequent outdoor exercise.
- Isolation*—Removal of cows to comfortable quarters outside of the dairy stable, when sick or at calving time.
- Location of Stable*—Elevated, with healthful surroundings.
- Lighting*—As light as a well lighted living room, and with not less than four square feet for light from the east, south or west, for each cow.
- Ventilation*—An adequate ventilating system of the King or other approved pattern, and, except when the stable is being cleaned, no marked stable odor.
- Food*—Clean, wholesome feeding stuffs, fed in proper quantities.
- Water*—Clean, fresh water, free from possibility of contamination by disease germs.
- II. *Cows*—Cleaned by thorough brushing, and where necessary by washing; no dust nor dirt on the hair (stains not considered). The udder thoroughly cleaned by brushing at least thirty minutes before milking, and by washing just before milking, leaving the udder damp to cause dust to adhere.
- Stable*—Free from accumulation of dust and dirt except fresh manure in the gutter. Apart from horses, pigs, privy, poultry-house, etc.
- Barnyard and Pasture*—No injurious plants, no mudhole nor pile of manure or any decaying substance where cows have access.
- Stable Air*—Free from floating dust and odors. Tight partition or floor between the space occupied by cows and that used for storage of feed or other purpose.
- III. *Construction of Utensils*—Nonabsorbent material and every part accessible to the brush, and, except inside of tubes, visible when being cleaned.
- Cleaning*—Thorough cleaning with brush and hot water, and rinsing. No laundry soap. Thorough sterilization.
- Water*—From a source known to be pure; protected from contamination from seepage, or surface drainage.
- Care of Utensils*—Such as to avoid contamination by dust as well as coarser dirt.
- Small-top Pail*—With opening not over seven inches in diameter, and at least one-third of this opening protected by hood.
- IV. *Employees*—Free from contagious disease and not dwelling in nor frequenting any place where contagious disease exists.
- Milking Suits*—Freshly laundered and clean; ample to protect from dust and dirt from the milker's person or clothing.
- Milker's Hands*—Hands and teats dry when milking. Hands thoroughly cleaned before milking each cow.
- Milking Quietly*—So as to avoid dislodging dirt from cow's hair. At least four streams of foremilk from each teat to be discarded into a separate vessel.
- V. *Cooling*—Cooled within fifteen minutes of milking, to temperature below 45 degrees F.
- Handling*—In a room used exclusively for handling milk, and free from dust, dirt and odors; and the milk after being cooled, always at a temperature below 45 degrees.
- Protection During Transportation*—Protected from dirt by tightly closed receptacles, temperature always below 45 degrees F.; not delayed in transit, reaching market within twenty-six hours after milking.

Of course this card would not be usable in the hands of an inspector who knew nothing about it and Professor Pearson prepared a folder for the use of the inspector. On this folder were questions which could be easily answered by any intelligent person. The inspector filled out these blanks at the farm, and in the first case gave the farmer a copy so that he should know just what the inspector was sending in. This was to forestall any misunderstanding and pacify the farmer, for it was painfully evident that the inspector was green at the business.

From these reports the score cards were filled out in duplicate, one being sent to the producer. Each bore a list of the items cut and at the bottom the statement that "errors and omissions would be cheerfully corrected." Thus each producer knew just where he stood and why he was there. Getting at the fact was the first step toward improvement. An item of "Manure on cows, cut 10 points" was perfectly clear and the man knew that if he did not want the cut next time he must remove the manure.

You will observe that the dairies are to be graded into Excellent, Good, Medium and Poor, depending on the score. When we began in September, 1907, there were none excellent, 2 good, 23 medium and 15 poor. I think that this is about as good a showing as could be expected of the average city supply in the State at that time.

Another meeting of the producers was called and the general situation explained to them and their co-operation asked in bettering conditions. They were told that every time that the basis of a cut marked on the score card against their dairy was removed their score would profit by it. The places were pointed out where the greatest gain could be made at the least expense, and they were promised a reasonable time in which to make the improvements before their score should be made known to the public. The time for the annual contracts between the retailers and the producers was drawing near and it was suggested that the scoring and the score card could be used as a basis for making contracts because before the end of the coming year the public would be informed of the score of all of the milk delivered in the city.

The response to this offer was quick and decided. A large number of the producers had evidently wished to make a better article and believing that if the quality of their goods was to be fairly put before the public they would get a price which was right, they

rapidly improved. The contracts between the producers and the retailers were all on the basis of three cents wholesale and the milk was retailed at six cents.

After practically a year in which to adapt themselves to the new condition of things the ratings of all of the producers were given to the public along with the name of the retailer so that the consumer could know the character of the milk he was buying. At the time of first doing this there was some protest from some who had not taken the matter seriously up to this point. They were few in numbers in comparison to those who had worked hard to get their dairies in good condition and have a good rating and after the first time everyone seemed satisfied with the quarterly report of all of the dairies.

The general effect of this system on the milk supply at the end of two years is shown by the report for September, 1909, which shows 3 dairies excellent, 29 good and 3 medium. The poor class has disappeared and the three medium are so near good that the medium class will probably soon disappear. The producers appear to be satisfied, as they are now receiving three and one-half cents wholesale and milk is retailing at seven cents per quart.

The most gratifying part of the situation is the fact that the results have been reached practically without any hard feeling and without any force being exercised. Our milk ordinances only cover a single page of our little book of ordinances and all they say is that milk must not be bottled on the street, milk tickets shall not be used a second time, and all retailers must have a license. We recognize the fact that we have no authority outside of the city limit and that our inspection of the farms is a mutual courtesy. It is the only way we can get the facts and the producers cannot sell their product without it since we grant a license only to retailers of the product of inspected dairies. We have relied on the law of supply and demand to do the work and it has surprised us at the results.

Do not gather from this that the milk problem is solved. Our milk is immeasurably better than it was, but it is still far from ideal food, especially for children. Only three out of thirty-five dairies have been tested for tuberculosis, so that on that point we have made hardly more than a beginning.

The important thing is not the results but the fact that we have found a way of getting results, and when it is found it is simple enough — just treat the dairyman as an honest, intelligent citizen, striving under some difficulties in his effort at improving the quality of his goods, and he will surprise you by the way in which he will live up to the character you have marked out for him.

THE CHAIRMAN — We will hear now from Dr. Louis Van Hoesen, of Hudson, New York.

DR. LOUIS VAN HOESEN — There are to be found in our cities many grades of milk, on account of many grades of milkmen. To say that there is none so bad as to be totally unfit to contribute to a city's source of supply means letting down the bars to some very unscrupulous and unteachable men; and discourages the efforts of the cleaner producer, who should be protected from some of the degraded class of competition.

It is true that we must have different grades of milk; but it is not always true that the common people will select the safe sources of supply, and it will be often impossible to prevent the sale of highly dangerous milk unless by regulations which control to some extent the methods of production.

The vital importance of regulating a milk supply hinges upon the high mortality of infants chiefly among the poorer and more ignorant classes of society. The recent immigrant and his family are not easily led to patronize a safe class of producers; and if as usually happens in our smaller cities, a few of his immigrant acquaintances have embarked in the milk business, we may be certain that the milk produced in the dirty, poorly-equipped dairy of the ignorant immigrant farmer will constitute the source of supply of a majority of these unteachable families. Home care of milk no doubt often adds to the bad effects of a bad supply, and most health officers can testify to the number of burial permit stubs which result.

The law of supply and demand does not often enter into the situation at all among the class of consumers who most need protection from the bad grades of commercial milk, but some minor matter of convenience, reduced price, ability to speak the language of the customer, etc., puts the bad milk in the hands of the ignorant consumer.

Different methods of improving a milk supply seem advisable for different localities; in regions where the influence of agricultural schools has awakened an increasing knowledge of the importance of dairy sanitation, a system of co-operation and encouragement of business pride in reputation of product seems very satisfactory. But not to exclude dangerous milk, and to have no power to exclude the worst grades where known to be highly dangerous to life, leaves a board of health lamentably weak in dealing with this important question.

Inspection of dairies seems indispensable in regulation of a milk supply, and in order to secure the right to inspect dairies located outside the local jurisdiction of a board, it is quite necessary to adopt some system of permits or licenses which entail upon the holder consent to make such inspection. When conditions are found which are so intolerably bad as to make a certain output highly dangerous, and requiring it to be discontinued, considerable power must be given to the local health authorities, or their orders can be successfully defied. I have seen a herd in which a cow with actinomycosis, and pus freely discharging from neck and jaws, was rubbing against other milk cows in a narrow yard and stable, and the owner did not agree with me as to the need of immediate separation of the affected animal. If we cannot control such conditions, our usefulness is too greatly limited.

Whether ordinances or rules should state under what conditions milk should be handled and sold is also in some cases open to discussion: if a number of producers insist that their customers prefer to buy warm milk, and therefore they will not cool the milk at all, but bring it a considerable distance in hot

weather, without reducing its animal heat. Then if practical as well as bacteriological tests show that this milk is being delivered in bad condition, is it not better to have some rule under which the health authorities can compel, if necessary, the proper cooling. In case a producer is found housing 25 cows in a stable which should accommodate 15, and he says he thinks because his grandfather built the stalls for 25 cows, it will have to be good enough for him, and the poles overhead with festoons of cobwebs, dust and hayseed have always been good enough, and he has never taken the trouble to whitewash, and don't intend to do it. Should we not have some rules to fall back upon after the milk of human kindness has soured?

My personal experience with licenses and dairy rules has been rather limited. During the first year of my term of service as health officer (1907) I inspected the dairies supplying the city, and advised certain improvements without arousing any very active interest among the milkmen, only two of thirty complying with my request that at least an annual whitewashing be done. In the fall and winter of 1908-9, the State Department of Agriculture inspected our milk farms, making three tours of inspection at intervals of several weeks, and upon their last visit informed me that two of the dealers supplying Hudson had failed to comply with any of their suggestions, and were producing milk under such highly insanitary conditions that it was advisable to compel them to discontinue their business. How to compel these men to stop selling milk by action of a local health board which had no definite rules, a violation of which could be charged as a complaint in the legal action which was certain to ensue, seemed a puzzle.

A code of milk ordinances was therefore adopted, and while nearly every dairy has greatly improved in some respects, all being now whitewashed, many ceiled overhead, and vast improvement made in the general condition, we were obliged to sue two dealers for the penalty incurred by refusing to apply for licenses. After considerable delay these cases have been decided in favor of the city, judgment being rendered for the amount of penalty, and we hope that these dealers will comply with the regulations, obtain the licenses, and comprehend that a local board of health can make rules in matters which endanger human life, which every man must respect and obey.

As to leaving the regulation of the milk supply to the patronage of the consumer, I would say from my own local experience, that much less than half of the working classes know anything whatever about the cleanliness of the milk they buy, and very many would not listen to, or appreciate, any efforts to inform them, thus giving an abundant market for the dirty and dangerous grades, which often sell for the same price as obtained by the more careful producer.

While ready to hold out the olive branch to the producer of milk who respects the rights and safety of his customers, I believe there are cities in the pioneer stage of dairy regulation, where more will be accomplished if the careless class of producers are impressed with the idea that behind all of our peaceable and harmonious advance, we carry the stimulating influence of the big stick.

As to the effects of dairy regulation upon the financial return to the producer; it has been shown that a reasonable amount of dairy control, by improving the health of cows, increases the production of milk, and the life and health of the cattle, thus benefitting both producer and consumer.

DR. WATERS — We find that in making the inspection that the producers feel we are infringing upon their rights. I cannot take care of that any better than by telling you of a young man who went down the street, swinging his arms in a circle, until finally he struck a man in the face. The man said, "What do you mean by swinging your arms in that way?" The young man replied, "I am exercising my personal rights and privileges." The man who had been struck, said, "Well, your personal rights end where my nose begins." So, I think the personal rights of the producer of milk end when the consumer finds fault and troubles begin.

We find that the trouble with the milk producers is that they are ignorant, indifferent, careless and lazy. Dr. Sadtler scored our milk producers a short

time ago, and after his report was made public one of the milk producers said, that in order to follow out the ideas of Dr. Sadtler, "I would have to charge twelve cents a quart for my milk." I said that if he could furnish twelve-cent milk I would furnish the consumers for it. I think it would be well if a circular was made out, explaining what we would like the farmers to do to improve the condition of their output. The farmers do not understand the score-card, and the State Department of Health, if it placed those in the hands of the health officers, would help us very much to attain the ends to be desired.

THE CHAIRMAN—We will open the discussion, but not for more than five minutes.

DR. ——— I believe the milk is in the condition these gentlemen represent, but I want to call attention to some facts which have come under my own observation with many families, in connection with milk. I have known cases in regard to cholera infantum. The mothers failed to understand what was the trouble. They do not know enough to sterilize the bottle. The bottle is used two or three times without anything being done with it. They do not know enough about rinsing, or putting it in hot water and then putting it in the sunlight, and then cleanse it every time it is used.

DR. ——— I wish to say to this convention, that I am not only the health officer of our town, but I am a producer of milk for the New York market. I acknowledge all that has been said in regard to the standpoint of the sanatorium, and it is good; but I would like the public to understand that we cannot produce such milk as that, such milk as is called for at the very small price we receive for it. We cannot, at the price we receive, give the milk which the theorists lay down for us to-day. Unless the public can be shown that they must pay a reasonable price, they will not get good milk. Professor Harding's address was the only sensible address which I have heard on the matter of production, as he not only tells what the producer should be made to do, but he also speaks of some of the conditions under which the producer labors. I am producing milk now for one and one-half cents a quart, that sells for eight or nine cents a quart in New York. I am paying more for feed to produce that milk by practically double any sum that I have paid in years past. That is, in the last two years the price of feeds has about doubled. That is all the point which I wish to make, and it is a point which must be met if the public is to insist on getting pure milk.

DR. YOUNG—I think we had better look after the feed as well. I have a case of a child nursing from a bottle, and it was not until I took her off the food she was having and put her upon ordinary food that she got well. The stomach had lost the power to establish a proper relation between the component parts. I think when we take the sterilizing milk and putting in benzoate of soda in food, I think some of the living germs in the milk are necessary to promote good digestion.

DR. GOLER—Mr. Chairman, the gentleman that produces one and a half cent milk should get only a cent and a half for it. That is all there is to that. The subject of milk production can be simplified if we could enforce the law. But unfortunately we live in a country where law is made only to soothe. It seems to me there are two standpoints from which we can attack this question, one from the producer and the other from the standpoint of the baby, that is the potential citizen of the State. And it seems to me that the baby has a certain inalienable right to pure milk; and we must see that the child gets what it should have.

The question of milk in cities, whether small or large, when we began our work here forty years ago, it was then a serious problem. To-day it is different. Now what we want in every city is clean, cold milk from tuberculin-tested cows, and I do not believe it is necessary that we, as yet, have to pay ten or twelve cents a quart for milk. It is perfectly possible to show the producer of milk something about what to do with what he has. If we

had in our health organization sufficient men to go out as teachers among the milk producers of the State we would be able to show these men by teaching, very soon, that they could produce milk to be sold in cities like Geneva at eight cents a quart with profit to the milkman and with little additional expenditure of money on the part of the milk producer. That is one of the ways in which the whole milk question is to be decided. To have the man taught what to do with his stable; to urge him to build a higher house; to have him put in a small sterilizing plant, including a boiler, that should cost about \$40, and other small matters that he can put in for \$10, and he should be taught to clean the udder and the cow in a newer way, and get a moderate return for that expenditure. There are men doing that over and over again, and making a good respectable living, and they are selling their own products and getting eight cents a quart for it. That is as far as we can go to-day, but it will deal with the practical solution of the milk question, whether in small cities or in large cities.

THE CHAIRMAN—Our next speaker is Dr. F. Park Lewis, of Buffalo, who as you all know has done more than any other investigator in the United States for the suppression of ophthalmia neonatorum.

DR. F. PARK LEWIS—It is a long step from clean milk and benzoate of soda in food, to prevention of ophthalmia neonatorum. Dr. Goler said in respect to the pure milk supply that the child had a right to proper milk; I think we can add to that that it has a right, an inherent right, to the protection which we will ask for in this connection.

THE PREVENTION OF OPHTHALMIA NEONATORUM

BY F. PARK LEWIS, M.D.

Buffalo

If to any one of us were given the opportunity of conferring upon a human being a gift which would mean a lifetime of happiness and usefulness, and the absence of which would take from that life its brightness and joy — which would give to a fellow creature all of the possibilities, which you or I enjoy — but the deprivation of which would leave only helplessness and dependence — if in a word we could give or take that which would make or mar the entire career of one of our fellows, we would regard such a power as a gift of the gods and be thankful while we lived that we had been chosen to exercise it. Without our fully realizing its import, to each one of us who has the knowledge and the will to act in preventing the blinding of new-born babies is this gift given.

The employment of the right thing, in the right way, at the right time — which is just after the child is born — means seeing eyes. Its neglect may mean lifelong blindness. The failure to use the simple measures that are provided to save the child from blindness is almost always due to the fact that the gravity of the danger is not understood. So many children are born that are *not* infected that the attendant, whether doctor or midwife, grows to feel that much has been made of a little matter, that the infections are relatively rare, and that when they do occur they are easily controlled, and no special effort is made to protect the child's eyes. Then when infection does occur the inflammation which develops is supposed to be a trifling matter, "the baby has probably taken a little cold," then rapidly the inflammation becomes acute and help is wildly sought in every direction. The specialist is called who gives unremitting attention to the suffering child or, as happens among the less careful, the doctor thinks he himself can care for such a controllable infection and when skilled help is finally sought it is found that the damage is irreparable and the baby is hopelessly, incurably blind. That particular physician will probably in future be scrupulously careful in the management of the children whose

birth he attends, but another doctor in the next county or a midwife in the slums of a great city must have a like experience and, while the multitude of children escape, the aggregate of the occasional disaster constitutes a large group who struggle through life with defective eyes or are found in the schools for the blind.

In addressing the health officers of the State of New York, an honor which I assure you I appreciate, I do not hope to be able to present to you anything now touching upon this subject, but as officials of the State your opportunities are so unusual and the possibilities so great for helping in this campaign to save babies from blindness that I hope to emphasize some of the facts connected with this disease, and to ask you, whose experience is so broad and whose knowledge is so wide in matters pertaining to the public health, how a disease so disastrous in its results and yet so absolutely under control may be wiped out as a cause of blindness.

It is not my purpose nor would it be proper at this time and in this place to discuss the medical aspects of ophthalmia neonatorum. I need hardly say to you who are physicians what is common knowledge, that it is an infectious, preventable, and when taken sufficiently early, a curable disease, of new-born infants. When suitable prophylaxis — sanitary and medical — is not employed it becomes one of the most virulent of the inflammation diseases of the eyes. It menaces then not alone the eyes of the infant but the discharge, which is profuse and which is easily carried on the hands of careless or untrained attendants, if introduced into the eyes of an adult produces an inflammation of such a character, if unchecked, as to destroy the sight. It is curable at any time before the cornea is injured, and even then under right treatment the eyes may often be saved. It is sporadic and almost always comes from a previously infected mother. In a relatively small proportion of cases infection may be carried to the eyes of the child from outside sources. It occurs in various proportions in relation to the number of births according to locality in from one in fifty to one in two hundred cases. While it is more prevalent in the crowded districts where the poor live, it not infrequently develops in what is termed the highest social circles. It seldom occurs if one or the other of the parents has not become first infected. It need

rarely result in blindness if the proper preventive and remedial treatment are instituted sufficiently early.

The consensus of opinion is that the most efficient prophylaxis for the destruction of the infectious germs is one of the salts of silver and that which has been chosen for gratuitous distribution in this State, is one per cent. of nitrate. This when used according to specific directions may be employed with absolute safety in every normal new-born child. It produces a slight transitory conjunctival irritation which is termed silver catarrh. It is intended to be used as a prophylactic but once and that immediately after the birth of the child. Should infection develop notwithstanding its use, as sometimes happens, medical treatment should be immediately instituted. An essential is in keeping the eyes constantly cleansed from infecting discharges and the frequent installation of one of the less irritant salts of silver. This is always to be determined on the judgment of the attending physician. When this is done effectively and thoroughly it is the rarest exception that the eyes are lost. The exception does, however, occur and it must be borne in mind that sometimes, notwithstanding the exhibition of the highest skill and the most assiduous care, the disease will pass beyond control, and this very fact again emphasizes the wisdom and necessity of using local prophylaxis in every case.

The question is asked, Are these infections of such frequency and is resultant blindness so common as to warrant the concerted movement that is being carried on in the State and nation for its control? Before I answer this question let me say that not only those who are made blind suffer from this disease. A vastly larger number are those who have had corneal ulcers which have healed leaving scars which have given defective vision, limiting the usefulness of those so affected by numbering them among the partially blind. Of these we have no count. Indeed we have most imperfect records concerning the relative incidence of this disease. We have no records of the cases that occur in private practice. The limited reports from the hospitals are of little value, and no reports are made of the final condition of eyes treated for ophthalmia neonatorum in the various dispensaries.

Cohn, fourteen years ago, stated that in Breslau 2 per cent. of the children born were infected, while Harmon in his excellent

little monograph on "Preventable Blindness"—published two years ago, after many figures which I will not quote, says that they point to the conclusion that in London among every one hundred children born one child suffers from inflammation of the eyes, and of every two thousand children born one is blinded for life. Closely in harmony with these figures were my own imperfect investigations made in the city of Buffalo two years ago. We have reason to believe that the percentage of infection in greater communities is much the same.

Gonorrhœa as estimated by Noggerath is found in 80 per cent. of women as a result of the fact that it is or has been present, in large cities at least, in 90 per cent. of the men. It is not to be wondered, therefore, that the gonococcus causes about 66 per cent. of the infections of the eyes of the new-born. Naturally the largest number of the cases of resultant blindness is aggregated in the schools for the blind. The number of pupils registered at Batavia is about one hundred and fifty, while in the School for the Blind in New York City the registry includes about twice that number. The average number of those in Batavia who have been victims of ophthalmia neonatorum has been about 25 per cent. and as this has been the usual average in all of the schools for the blind in the United States in which careful examinations are made, we may safely assume that in the school in New York City, in which no records are made of this disease as a causative factor of blindness, that the same proportion will be found. These blind, accumulating year after year in the two schools under the State control, in one year, 1907, numbered about one hundred children, and the amount paid for their maintenance by the State was over thirty thousand dollars.

It has been estimated that of the blind in this State over six hundred owe their blindness to birth infections, and \$110,000 is annually paid for their support. It will be evident, therefore, that not only on the grounds of humanity but as an economic proposition, it would pay the State to stop the blinding of its infant citizens.

In order to determine the actual conditions which existed in Boston, the Massachusetts Commission for the Blind secured the appointment of a visiting physician, in connection with the Eye

Infirmaries, who went to the homes from which the birth-infected children came. These are some of the facts that were discovered.

The little children, the story of whose blindness is given below, were all born in Massachusetts since 1904. Had their eyes when first they became inflamed been promptly and properly treated, they would be seeing to-day instead of tragically handicapped.

A little four-months old baby whose mother is only nineteen is blind because the doctor did not know the proper treatment for the eyes. The child will always be a charge upon the State. The mother has been deserted by her husband, and her burden is doubled by the fact that she cannot look forward to being supported by her son in after life, as she might if he were a seeing child.

A French-Canadian baby a year old might have been saved from blindness if the doctor's repeated warning that he should be taken to a hospital for continuous care had been obeyed. But the friends were careless or ignorant and when finally they took the child to the hospital when three weeks old, it was too late — a pitiful case, as the young mother must bear the whole of its support.

A little French-American child of nearly two years is starting life wholly blind because of the neglect of the doctor who attended the mother at birth. The home is poor, the mother supporting the family. The baby must be brought up in an institution.

A baby, an only child, with one eye blind and the other badly scarred must be educated as a blind child. The attending doctor thought that the eyes "would get well by themselves."

A child of four years, bright and attractive, with a comfortable, happy home, has been totally blind since the first week of her life. Her mother was very ill at the time of her birth and the baby's eyes were neglected by those in charge. It was found necessary to remove one eye, making her appearance the more pitiful. All her life she will require special training. She might have taken her place among seeing children with a promising future before her, but someone was careless and the loss is irreparable.

An orphan girl, eight years old, is so small and feeble and puny that she looks three years younger. The disease not only destroyed her sight, but it left her eyes in an unsightly condition. She has no relatives and will be a ward of the State.

A child of Austro-Hungarian parents who speak no English was found in her home not far from Boston looking pale and thin, never having been out of doors. It has been found necessary to remove one of her eyes and the other is wholly without sight. She is six years old and will probably be a charge upon the community for life.

An orphan boy living with friends has one eye removed. **With** the other, though badly scarred, he sees slightly and his **friends** hoped that he might be educated as a seeing child; now **at seven** it has become clear that he must be sent to a school for the **blind**. A girl of fourteen has lived within a few miles of Boston **all** her life but cannot read or write because her parents refused **to** allow her to go to a school for the blind. She is now **at least** seven years late in beginning her education, while her **seven** brothers and sisters, who are normal boys and girls, have **attended** the public schools all their lives.

The persons mentioned below are those who have been blind through a long life.

Fifty years ago a little girl in a comfortable American home was left motherless and blind soon after birth. From the age of six to that of twenty-three the greater part of her life was spent in a school for the blind. She went out well fitted as a music teacher and ambitious to earn her living. As a blind woman, however, homeless, without relatives and not strong, she found herself unable to compete in the struggle for a livelihood and now, at fifty, she is disappointed, lonely and, except for bits of crocheting and knitting, forced into idleness. She has moved from one boarding-place to another, striving to be cheerful, though she has been obliged to live a life of idleness and darkness instead of the life of activity and usefulness she might have had if her eyes had not been neglected at her birth.

A woman of forty-five, totally blind all her life, was educated for seven years at a school for the blind at a probable expense to the State of \$2,000; but though bright, vigorous and cheerful, no work could be obtained for her at which she could earn her living. Private and public charity have helped her by turns, and she has done everything in her power to be useful where she has lived,—sometimes with friends, sometimes in public institutions, but middle age has found her in one of our large almshouses.

The children whose condition is suggested below will always suffer greatly from the effects of ophthalmia neonatorum. They are not technically blind, but are handicapped even to the extent of the loss of one eye. Some are on the border line of blindness and may, after much distressing experimentation and delay, have to be educated among the blind.

A little Irish girl, whose mother of eighteen years has been deserted by the father, has the sight of one eye destroyed. Soon after birth friends, on the advice of the doctor, took her to a hospital but were afraid to leave her there. A week after, when they brought her back, one eye was totally blind.

Another little Irish girl living in a comfortable home escaped

blindness but has a large unsightly scar on one eye because the treatment which the doctor gave her was insufficient.

A Syrian child has both eyes badly scarred, injuring both her sight and her appearance.

The parents of an Italian baby were urged by the doctor who attended its birth to take it at once to the hospital. They delayed until too late and the sight of one eye was destroyed.

Another little Italian baby has his eyes scarred so badly as seriously to interfere with his sight because the midwife did nothing herself for his eyes and did not advise a hospital. (There is no doubt that if careful investigations were made in the State of New York we would find, especially in the congested centers, a like series of cases in which a little care would have saved many babies from such tragic results.)

If it is admitted then, and it cannot be doubted, that blindness is still being produced as a result of birth infections, what must be done to prevent and control the ophthalmia of the new-born?

In our efforts to save the eyes of the children emphasis has not, heretofore, been placed upon the fact that had not the mothers been previously infected the number of cases in which the children would be in danger would be few indeed. Touching on this subject in a recent address on the Blindness of the New Born, Dr. Prince A. Morrow of New York says:

In the praiseworthy crusade against preventable blindness undertaken by the New York Association and other organizations efforts are chiefly directed to the recommendation of the employment of the Crede methods in all cases of child-birth, while the responsibility for blindness is squarely placed upon the shoulders of physicians and midwives for neglect in employing this method. I would not criticize the motives of the public-spirited men and women engaged in this noble work; but I would honestly question the wisdom of a policy which deems it inexpedient to enlighten the public as to a knowledge of the nature of the infection which causes blindness, and the condition under which it occurs, and thus place the responsibility where it belongs. The cause, communicative mode, and consequences of this infection may be traced step by step. In a vast majority of cases it has been contracted by the father of the child in licentious relations either before or after marriage, and communicated to the mother, who is made the passive and unconscious medium of instilling the virulent poison into the eyes of her own child.

In the conception of the laity blindness at birth is generally regarded as an unavoidable misfortune, a visitation of Providence. The public should know that it is the fateful expression of ignorance and criminal carelessness, the working of that relentless law of Nature which visits the sins of the fathers upon the children.

"Let the public be enlightened as to the true facts so that the educational value of the truth may have its full force and effect. In sacrificing truth to expediency do we not sacrifice too much — not only the health and lives of women and children, but the principles of humanity and justice which are outraged by those who carry infection into the family?"

"It is neither good science nor good prophylaxis to ignore the stream of infection continually polluting the channels of maternity, and make no effort to prevent its introduction. The best prophylaxis is to prevent effects by correcting the cause."

If I may, I will again quote the words of that wonderful woman, Helen Keller, who out of her darkness sees so clearly when she says: "The problem of prevention should be dealt with frankly. Physicians should take pains to disseminate knowledge needful for a clear understanding of the causes of blindness. The time for hinting at unpleasant truths is past. Let us insist that the States put into practice every known and approved method of prevention and that physicians and teachers open wide the doors of knowledge for the people to enter in. The facts are not agreeable reading. Often they are revolting. But it is better that our sensibilities should be shocked than that we should be ignorant of facts upon which rest sight, hearing, intelligence, morals, and the life of the children of men. Let us do our best to rend the thick curtain with which society is hiding its eyes from unpleasant but needful truths." And is it not true? When we realize the long list of casualties that come from venereal infections—often ignorantly, frequently innocently acquired, we may rightly ask if we are doing our whole duty in allowing boys to grow into manhood in such dangerous ignorance. The first step then is:

Wider knowledge concerning the cause of birth infection

The public should be taken into our confidence in regard to ophthalmia neonatorum, as it has been in tuberculosis, and it will prove to be an able ally in our struggle to get it under control.

The second step is statistical. In an infectious disease, which is liable to make its victim a public charge, the State has a right to know of its existence when it occurs. It is not necessary that the house be placarded, nor that the records be open to public inspection, but the fact of simply reporting the case, the statement having been previously made, in the birth certificate, that a prophylaxis had or had not been used will emphasize both to the physician and to the family the importance of the condition and will impress upon both the necessity of active and effective measures. It will also enable the department to quickly get in touch with those requiring assistance, and give help when it is needed.

It was found in the city of New York that many children died during the first days or weeks of life from inadequate care before the report of the birth had reached the Health Department.

Last summer a new measure was inaugurated and a visitor was sent at once in the poor districts to see the mother and the child, who were often left without any attention after the departure of the midwife or the tenement-house doctor. Necessary advice was given in regard to the care and feeding of the child and if ophthalmia was present the child was placed under the proper medical treatment. The result was a lowering of both morbidity and infant mortality, and the children were saved in some cases from what would have been inevitable blindness. Having some such course as this in view an enactment was passed in the last session of the Legislature reducing the time in which to report births to thirty-six hours. This was following a plan recently adopted in England, but was not completely carried out.

Unfortunately this early notification was not made to apply to the greater cities of the States, the very centers where it can be most effectively employed. It is sincerely to be hoped that at the coming session of the Legislature this defect may be remedied and the thirty-six hour registration law may be so amended as to apply to the entire State.

The importance of co-operation between the medical men of the State and the Health Department cannot be too strongly urged. The general practising physician is not usually brought in close touch with public movements and does not realize, until shown, how important is his aid in carrying out the plans which are instituted by the Department of Public Health. If at the local medical meetings the papers and discussions could be made to touch upon the larger problems of medicine, none would be more active supporters of these movements for the public good than the physicians of the State.

The solution of this problem of preventing blindness, like that of the prevention of all avoidable diseases, is more widespread knowledge concerning it.

A committee of women of the American Medical Association of which Dr. Rosalie Slaughter Morton of New York is chairman and Dr. M. May Allen of Rochester secretary, has been appointed for the purpose of organizing an educational movement concerning preventable diseases, in the women's clubs of the country. If our Department of Public Health would arrange a popular lecture on ophthalmia neonatorum, with graphic illustrations, such as have been so effectively employed in the tuberculosis campaign, it might be used with telling effect by the various women's clubs and other popular organizations, in making general the knowledge concerning the cause, the danger and the necessity of early and effective treatment in the birth infections of the eyes of the new-born infants.

I cannot too heartily commend the progressive efforts of our State Department which, with Rhode Island, has taken the lead among all of the States in gratuitously distributing a prophylactic to every obstetrician and midwife by placing in their hands a 1 per cent. solution of nitrate of silver. Accompanying the little vial of silver is a circular letter of advice impressing upon the recipient the necessity of its employment. It will serve as a constant reminder and, therefore, as a constant source of education to all having to do with the parturient woman. To briefly recapitulate, then, the ways in which the Department of Public Health can effectively aid in this great movement in preventing the blinding of babies are:

1 *Educational:*

By constituting each of the 1,200 health offices of the State local centers for the dissemination of knowledge both to the medical profession and the lay public concerning birth infections of the eyes of new-born infants.

2 *Statistical:*

Securing data regarding the incidence and results of the disease everywhere in this State; individuals as well as hospitals should make periodical reports. This can easily be done when its importance is recognized.

3 *Legislative:*

a Securing the enactment of an amendment making universal throughout the entire State the application of the thirty-six hour notification.

b Securing the adoption of a uniform law governing the licensing and practice of midwives.

4 *Executive:*

By securing for the infected children immediate treatment as is now done in New York City. This would be possible if births were registered within thirty-six hours, and would so limit the ravages of the disease as to practically wipe out ophthalmia neonatorum, as a cause of blindness in the State of New York.

DR. J. W. KNAPP, Canastota—After the exhaustive paper by Dr. Lewis there seems little for me to say on the subject of ophthalmia neonatorum prevention. It seems to be well established that over 30 per cent. of the cases of blindness in our institutions for the blind are due to ophthalmia neonatorum, and that they would have been prevented had suitable measures been taken for their prevention.

It is not safe for any physician to say that because he has not had cases that he will not. The festive gonococcus is abroad in the land and may turn up where least expected. So when we have a harmless preventative it is our duty to use it. With our present knowledge it is as criminal not to prevent ophthalmia neonatorum as it is not to use anti-toxin in diphtheria.

The general conclusion concurred in by all authorities is that infections can with almost absolute certainty be prevented and in the rare cases in which the infection develops, early treatment almost certainly insures its cure.

THE CHAIRMAN—We will now adjourn sine die.



HEALTH OFFICERS AND DELEGATES IN ATTENDANCE AT CONFERENCE

ALBANY COUNTY

F. D. Beagle, Albany.
Joseph D. Craig, Albany.
J. R. Davidson, Bethlehem.
Dr. F. H. Hurst, Guilderland Center.
William S. Magill, Albany.
Dr. Albert Mott, Cohoes.
Dr. M. S. Reid, Coeymans.
A. H. Seymour, Albany.

ALLEGANY COUNTY

Dr. A. T. Bacon, Canaseraga.
J. W. Collier, Wellsville.
W. O. Congdon, Cuba.
H. E. Cooley, Angelica.
W. J. Hardy, Belmont.
Dr. W. H. Loughhead, jr., Andover.
C. W. O'Donnell, Andover.
F. J. Redmond, Fillmore.
George W. Roos, Wellsville.
C. O. Sayres, Belfast.
Edith W. Stewart, Hume.
William S. Todd, Belfast.

BROOME COUNTY

Dr. D. S. Burr, Binghamton.
Dr. E. N. Christopher, Union.
C. H. Hitchcock, Binghamton.
Dr. Frank McLean, Barker.
J. R. Mung, Lestershire.
Dr. W. H. Wilson, Lestershire.

CATTARAUGUS COUNTY

Dr. Walter A. Cowell, Olean.
Dr. E. L. Fish, West Valley.
William Follett, Sandusky.
Dr. W. F. Gardner, Conewango.
H. W. Hammond, Ischua.
W. W. Jones, Dayton.
A. D. Lake, Gowanda.
Dr. S. B. McClure, Allegany.
George McIntosh, Cattaraugus.
E. M. Shaffner, Great Valley.
George R. Turk, Little Valley.
G. W. Winterstein, Portville.

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Dr. J. E. Chapman, Martville.
W. D. Cuddeback, Aurora.
Dr. C. A. Fisher, Cato.
N. B. Ford, Owasco.
Clinton E. Goodwin, Brutus.
Dr. J. J. Hill, Fair Haven.
Edward A. Hornburg, Cato.
B. K. Hoxie, Sherwood.
Frank Kenyon, Merrifield.
C. L. Lang, Cato.
Dr. R. R. McCully, Union Springs.
F. W. St. John, Weedsport.
G. C. Sincerbeaux, Locke.
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Dr. S. N. Thomas, Moravia.
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Dr. G. E. Ellis, Dunkirk.
Dr. Guy Granger, Sherman.
Dr. V. M. Griswold, Fredonia.
Dr. M. L. Harrington, Westfield.
Dr. J. H. Kellogg, Bemus Point.
Dr. O. C. Shaw, Cassadaga.
Dr. John J. Mahoney, Jamestown.
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Dr. F. C. Purcell, Kennedy.
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Dr. O. J. Bowman, Horseheads.
Dr. C. H. Erway, Elmira Heights.
Dr. F. B. Parke, Elmira.
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